REPORT OF THE SECRETARY

OF THE

SMITHSONIAN INSTITUTION

FOR THE YEAR ENDING JUNE 30

1911

(Publication 2065)

WASHINGTON
GOVERNMENT PRINTING OFFICE
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CONTENTS.

REPORT

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SECRETARY OF THE SMITHSONIAN INSTITUTION

CHARLES D. WALCOTT,

FOR THE YEAR ENDING JUNE 30, 1911.

To the Board of Regents of the Smithsonian Institution:

GENTLEMEN: I have the honor to submit a report showing the operations of the Institution and its branches during the year ending June 30, 1911, including the work placed by Congress under the direction of the Board of Regents in the United States National Museum, the Bureau of American Ethnology, the International Exchanges, the National Zoological Park, the Astrophysical Observatory, and the United States Bureau of the International Catalogue of Scientific Literature.

The general report reviews the affairs of the Institution proper, with brief paragraphs relating to the several branches, while the appendix presents detailed reports by those in direct charge of the work. Independently of the present report, the operations of the National Museum and the Bureau of American Ethnology are fully treated of in separate volumes.

THE SMITHSONIAN INSTITUTION.

THE ESTABLISHMENT.

The Smithsonian Institution was created an establishment by act of Congress approved August 10, 1846. Its statutory members are the President of the United States, the Vice President, the Chief Justice, and the heads of the executive departments.

THE BOARD OF REGENTS.

The Board of Regents consists of the Vice President and the Chief Justice of the United States as ex officio members, three Members of the Senate, three Members of the House of Representatives, and six citizens, "two of whom shall be resident in the city of Washington, and the other four shall be inhabitants of some State, but no two of them of the same State."

On July 4, 1910, Chief Justice Fuller died and was succeeded on December 19 by Chief Justice Edward Douglass White as ex officio member of the board.

At a meeting of the Board of Regents on December 8, 1910, the Hon. James S. Sherman, Vice President of the United States, was elected Chancellor.

The personnel of the board has been further changed by the resignation of Hon. John B. Henderson and the appointment of John B. Henderson, jr., as a Regent.

GENERAL CONSIDERATIONS.

The Smithsonian Institution has had a powerful influence for more than 60 years in the development of science in the United States. Its achievements in many lines of research and exploration have been of great good in the promotion of the welfare of the human race. The Institution and its branches continue to be engaged in a wide range of activities, covering practically the entire field of natural and physical science, as well as anthropological and archeological researches.

In my last report I referred to the establishment of a trust fund, through the generosity of Mrs. E. H. Harriman, which yields an annual income of $12,000, to be devoted to the definite purpose of carrying on scientific studies, particularly of American mammals and other animals, the donor specifying Dr. C. Hart Merriam as the investigator to carry on the work during his lifetime. I believe it desirable to establish a number of such research associateships, whereby especially capable men in other branches of science may be afforded opportunities for research work without the care and burden of administrative duties, and with full assurance that as long as their work is properly conducted it will be continued and that provision will be made for them when incapacitated for active service. The field for scientific investigation is extensive, and there are numbers of worthy projects that can not now be undertaken because of lack of means—projects that could not properly be carried on through Government appropriation, but which the Smithsonian Institution could readily undertake were the means available.

Friends of the Institution have from time to time generously provided funds for carrying on important explorations and researches, as in the case of the Smithsonian African expedition, and more recently by largely supporting the Smithsonian biological survey of the Panama Canal Zone.

It seems proper that I should here call special attention to the motive which led the late George W. Poore, of Lowell, Massachusetts, who died December 17, 1910, to make the Smithsonian Institution his residual legatee. By the terms of the will the estate, esti-

mated to be about $40,000, is bequeathed under the condition that the income from this sum should be added to the principal until a total of $250,000 should have been reached, and that then the income only should be used for the purposes for which the Institution was created. The fund will be known as the Lucy T. and George W. Poore fund. The closing words of this item of the will read as follows:

> I make this gift not so much because of its amount as because I hope it will prove an example for other Americans to follow, by supporting and encouraging so wise and beneficent an institution as I believe the Smithsonian Institute to be, and yet it has been neglected and overlooked by American citizens.

ADMINISTRATION.

On account of the large increase in the administrative work of the Institution and its branches, brought about by the natural growth of their activities and the addition of new interests, it appeared advisable to appoint an additional Assistant Secretary, to have immediate charge of the Library and International Exchanges. With the approval of the Regents, I appointed to that position Dr. Frederick William True, who entered the service of the Institution in 1878 and for several years had been head curator of biology in the United States National Museum. Dr. True entered upon the active duties of his office on June 1, 1911.

FINANCES.

The permanent fund of the Institution and the sources from which it was derived are as follows:

Deposited in the Treasury of the United States.

Bequest of Smithson, 1846		$515,169.00
Residuary legacy of Smithson, 1867		26,210.63
Deposit from savings of income, 1867		108,620.37
Bequest of James Hamilton, 1875	$1,000.00	
Accumulated interest on Hamilton fund, 1895	1,000.00	
		2,000.00
Bequest of Simeon Habel, 1880		500.00
Deposit from proceeds of sale of bonds, 1881		51,500.00
Gift of Thomas G. Hodgkins, 1891		200,000.00
Part of residuary legacy of Thomas G. Hodgkins, 1894		8,000.00
Deposit from savings of income, 1903		25,000.00
Residuary legacy of Thomas G. Hodgkins		7,918.69
Total amount of fund in the United States Treasury		944,918.69
Registered and guaranteed bonds of the West Shore R. R. Co. (par value), part of legacy of Thomas G. Hodgkins		42,000.00
Total permanent fund		986,918.69

In addition to the above, there are four pieces of real estate bequeathed to the Institution by the late R. S. Avery, some of which yield a nominal rental and all are free from taxation.

That part of the fund deposited in the Treasury of the United States bears interest at 6 per cent per annum, under the provisions of the act organizing the Institution and an act of Congress approved March 12, 1894. The rate of interest on the West Shore Railroad bonds is 4 per cent per annum.

The income of the Institution during the year, amounting to $83,435.30, was derived as follows: Interest on the permanent foundation, $58,375.12; contributions from various sources for specific purposes, $14,518.43; and from other miscellaneous sources, $10,541.75; all of which was deposited in the Treasury of the United States to the credit of the current account of the Institution.

With the balance of $35,364.88 on July 1, 1910, the total resources for the fiscal year amounted to $118,800.18. The disbursements, which are given in detail in the annual report of the executive committee, amounted to $86,374.52, leaving a balance of $32,425.66 on deposit June 30, 1911, in the United States Treasury.

The Institution was charged by Congress with the disbursement of the following appropriations for the year ending June 30, 1911:

International exchanges	$32,000
American Ethnology	42,000
Astrophysical Observatory	13,000
National Museum:	
Furniture and fixtures	125,000
Heating and lighting	50,000
Preservation of collections	300,000
Books	2,000
Postage	500
Building repairs	15,000
Building	77,000
National Zoological Park	115,000
International Catalogue of Scientific Literature	7,500
Elevators, Smithsonian Building	10,000
Total	789,000

EXPLORATIONS AND RESEARCHES.

Various scientific explorations and researches have been carried on during the past year by the Institution as far as its limited income and the generosity of its friends would permit. There have also been important biological, ethnological, and astrophysical researches by the National Museum, the Bureau of American Ethnology, and the Astrophysical Observatory, respectively, which are discussed elsewhere in this report.

STUDIES IN CAMBRIAN GEOLOGY AND PALEONTOLOGY.

During the field season of 1910 I continued the study of the Cambrian strata of the section of the Rocky Mountains adjacent to the main line of the Canadian Pacific Railway, special attention being given to the Stephen formation. The outcrop of this formation was carefully examined for many miles along the mountain sides, with the hope of finding a locality where conditions had been favorable for the preservation of the life of the epoch. The famous trilobite locality on the slope of Mount Stephen above Field had long been known and many species of fossils collected from it, but even there the conditions had not been favorable for the presence and preservation of examples of much of the life that, from what was known of older faunas and the advanced stage of development of the Upper Cambrian fauna, must have existed in the Middle Cambrian seas. The finding, during the season of 1909, of a block of fossiliferous siliceous shale that had been brought down by a snowslide on the slope between Mount Field and Mount Wapta led us to make a thorough examination of the section above in 1910. Every layer of limestone and shale above was examined, until we finally located the fossil-bearing band. After that for 30 days we quarried the shale, slid it down the mountain side in blocks to a trail, and transported it to camp on pack horses, where the shale was split, trimmed, and packed and then taken down to the railway station at Field, 3,000 feet below.

A number of sections of the Cambrian rocks were studied and measured in the mountains north and south of Laggan, Alberta, and many beautiful panoramic photographs secured.

BIOLOGICAL SURVEY OF THE PANAMA CANAL ZONE.

At the date of my last annual report the Institution contemplated an exhaustive biological survey of the Panama Canal Zone, and it was then hoped that definite plans would soon be completed and the survey undertaken within a few months. I am glad now to report that chiefly through the generosity of friends of the Institution the necessary funds for carrying on the work became available. With the cooperation of several of the executive departments, and of the Field Museum of Natural History, a party of about 10 naturalists was accordingly sent to the zone, and the results so far accomplished have been very satisfactory. Large collections of biological material have been received, including specimens of a considerable number of genera and species new to science.

Much interest is manifest in the survey both here and in the zone. The Republic of Panama was so impressed with the importance of the work that it invited the Institution to extend the survey within

the bounds of that country, which was done with gratifying results as far as the limited means and time permitted.

As stated in my last report, it seemed to be highly important to science that such a survey of the Canal Zone be made, for, although it was known in a general way that a certain number of species of animals and plants in the fresh-water streams on the Atlantic side of the Isthmus were different from those on the Pacific side, no definite knowledge of the extent of these differences had been acquired. It also seemed important to determine exactly the geographical distribution of the various organisms inhabiting the Isthmus, which is one of the routes by which the animals and plants of South America have entered North America and vice versa. When the Panama Canal is completed the organisms of the various watersheds will be offered a ready means of mingling together, the natural distinctions as regards distribution now existing will be obliterated, and the data for a true understanding of the fauna and flora will be placed forever out of reach. Moreover, a great fresh-water lake will be created by the construction of the Gatun Dam, and the majority of the animals and plants inhabiting that locality will be driven away or drowned, and quite possibly some species may be exterminated before they become known to science.

BIOLOGICAL EXPEDITION IN CANADA.

Through the courtesy of the Canadian Government and of Dr. A. O. Wheeler, president of the Alpine Club of Canada, the Smithsonian Institution was enabled to send a small party of naturalists to accompany Dr. Wheeler on his topographical survey of the British Columbia and Alberta boundary line and the Mount Robson region. The party started in June, 1911.

The region to be surveyed includes a most rugged and broken country in the midst of the Canadian Rockies, abounding in a great variety of animals and plants, and it is expected that the expedition will result in a large and valuable collection of birds, mammals, insects, and plants to be added to the National Museum series.

RAINEY EXPEDITION IN AFRICA.

Mr. Paul J. Rainey, of New York City, having planned a hunting and collecting trip of several months' duration in Africa, offered to present to the Institution the natural history material obtained during the trip if there could be sent with him some person skilled in the preparation of specimens. Mr. Rainey generously offered to bear all the expenses of the trip. The route of travel was to be north of that of the recent Smithsonian African expedition, through the country lying between the northern portion of British East Africa and the southern part of Abyssinia. Mr. Edmund Heller, who was

one of the field naturalists of the Smithsonian African expedition under the direction of Col. Roosevelt, was accordingly detailed to accompany Mr. Rainey, and letters have been received indicating very successful results.

BIRD STUDIES IN THE ALEUTIAN ISLANDS AND BERING SEA.

A small party of naturalists made a brief visit to the Aleutian Islands and Bering Sea during the season of 1911, chiefly in the interest of the Smithsonian Institution and the Biological Survey of the Department of Agriculture, especially for a study of land and marine birds. Through the cooperation of the Treasury Department the party was afforded transportation on the revenue cutter *Tahoma.*

The principal results of the visit were the collection of a good series of all the land birds of the islands visited, including a particularly fine series of ptarmigan, and a large number of eggs, and the securing of some interesting observations on the distribution and habits of the birds of that region. These observations will be made use of by Mr. A. C. Bent, who has undertaken to complete the work on the life histories of North American birds, two volumes of which, by the late Maj. Charles Bendire, have been published by the National Museum and the Smithsonian Institution.

ANTHROPOLOGICAL RESEARCHES IN PERU.

During the summer of 1910 Dr. Aleš Hrdlička, of the National Museum, visited the great ruins of the temples and city of Pachacamac, about 18 miles south of Lima, and also the ruins and cemeteries in the district of Trujillo, Peru, where he collected upward of 3,400 crania and a quantity of other skeletal parts. A large percentage of the gathered skulls are free from artificial deformation and therefore afford a much better opportunity than previous collections for a critical study of the peoples who centuries ago occupied and congregated in these regions.

Pachacamac was a religious center, much like the Egyptian Thebes and the Mohammedan Mecca, to which pilgrims flocked from all parts of Peru. After the destruction of the Temple of the Sun by the Spaniards, the place became a desolate pile of ruins, with from 60,000 to 80,000 graves of pilgrims who had come from widely separated regions. The Valley of Chicama, near Trujillo, with the neighboring country, was the seat of the powerful people known after one of their chiefs as Chimu.

As to the importance of the material collected, Dr. Hrdlička remarks:

> Peru may well be regarded, even in its present territorial restrictions, as the main key to the anthropology of South America. Due to the numbers of its ancient inhabitants, and to their far-reaching social differentiations, indi-

cating long occupancy, a good knowledge of the people of Peru from the earliest times is very desirable, and would constitute a solid basis from which it would be relatively easy to extend anthropological comparison to all the rest of the native peoples of the southern continent. Such anthropological comparisons will be greatly facilitated by the collections acquired on this expedition.

Some of the interesting results of his work are described by Dr. Hrdlička in a pamphlet recently published by the Institution.

RESEARCHES UNDER THE HODGKINS FUND.

With a view to aiding in the establishment of an international scale for the measurement of solar radiation, as mentioned in my last report, a limited grant from the Hodgkins fund has been approved for the construction, in the Smithsonian workshops, of several silver disk pyrheliometers, after the design of Mr. C. G. Abbot, Director of the Smithsonian Astrophysical Observatory.

The International Solar Union has for some time been interested in the establishment of an international standard scale of radiation, and pyrheliometers of varying types have been in use at different observatories. The desire, however, for still another simple but accurate instrument seemed general, and the Institution has been gratified to learn that, by the use of the Abbot pyrheliometer, a more exact knowledge of solar radiation and the influence of the terrestrial atmosphere upon it have been promoted.

Arrangements have been made whereby the Abbot pyrheliometer is now in use in widely separated localities. There is one in the astronomical observatory established by Harvard College at Arequipa, Peru; another in the observatory at Teneriffe: and two have been sent to the minister of agriculture in Buenos Aires for meteorological stations in Argentina. The Department of Agriculture, the Bureau of Standards, and the United States Weather Bureau in Washington are supplied with the instruments; Prof. Chistoni, of the Royal University of Naples, has installed one there, and the Imperial College of Science and Technology at South Kensington, London, has secured one. Prof. Violle, of the National Observatory of Arts and Crafts, Paris, was among the first to install one of the Abbot instruments, and one has been sent to Dr. Hellmann, director of the Royal Prussian Meteorological Institute, Berlin. The University of Toronto, Canada, the University of Wisconsin, and the Central Physical Observatory of St. Petersburg also have them, and inquiries from other institutions as to the mode of securing them are frequent, so that the establishment of the desired international standard of estimating and recording the variations of solar radiation seems to have been already aided by the use of uniform instruments in many widely separated localities.

The distinguished specialists who form the committee on award for the examination of the memoirs submitted in the Hodgkins prize competition, announced in connection with the Congress on Tuberculosis of 1908, have not yet submitted their decision. This delay is regretted by the Institution as sincerely as by the competitors, but has seemed to be unavoidable as the large number of papers presented and their technical character make it very difficult to render a prompt decision.

Then, too, it is to be remembered that, according to the terms of the competition, the successful paper is to embody an original theory or discovery for the treatment of tuberculosis, not before published, a difficult task at a time when the attention of the medical world is so generally directed to the same subject.

The Langley Memoir on Mechanical Flight, the publication of which by the Hodgkins fund of the Institution was unfortunately delayed by causes beyond the control of the Institution, was completed just at the close of the fiscal year, as mentioned on another page.

SMITHSONIAN TABLE AT NAPLES ZOOLOGICAL STATION.

The Smithsonian Institution for 18 years past has maintained a table for the use of American biologists at the Naples Zoological Station. Exceptional opportunities are there afforded for the study of marine life, and it is believed that the cause of biological science has been thereby much advanced.

The application of Dr. R. S. Williams, of Miami University, mentioned in the Secretary's Report for 1910, was approved for March and April, 1911. Dr. Williams was chiefly occupied at Naples in ascertaining the rate of growth of recent encrusting organisms, especially bryozoans, with a view to the use of this information in researches on the Richmond division of the Ordovician period. The results thus far obtained by him he considers preliminary, and he proposes to continue the same research at some future time on a float anchored in the open sea.

In addition to his work on the bryozoan fauna, Dr. Williams secured a representative collection of the jaw apparatus of the free-swimming annelids belonging to the Eunicidea and the Glyceridea.

The appointment of Dr. Sergius Morgulis, a Parker Traveling Fellow from Harvard for 1911, was approved for the Smithsonian seat at Naples for the months of May, June, and July of this year.

Dr. C. W. Hargitt, of Syracuse University, a Smithsonian appointee at Naples for three months in 1903, was accorded a second occupancy during the present year. Several papers, among which

may be mentioned "The Hydromedusae of the Bay of Naples" and "Regeneration in Rhizostoma pulmo," were published by Dr. Hargitt as a result of his former appointment, and a report of his work during the present year is now in hand. He mentions with appreciation the cordial welcome accorded him by the director and staff of the laboratory, and the generosity with which the facilities for his work were provided.

Two papers embodying the results of Dr. Hargitt's recent investigations have been completed since his term at Naples, and are now in course of publication in the Journal of Experimental Zoology.

The application of Dr. Ch. Zeleny, associate professor of zoology in the University of Illinois, was approved for one month's occupancy, to cover part of June and July, 1911. No summary of the work accomplished during this period has yet been received from Dr. Zeleny.

When the same period is selected by more than one student the earliest application is considered first, the approval of the later ones becoming necessarily dependent on the ability of the station to provide for more than one Smithsonian appointee at the same time. It should be added that the obliging courtesy shown in this connection to appointees of the Smithsonian Institution by the director of the station often permits appointments to the seat which would otherwise be impracticable.

The prompt and efficient aid of the advisory committee in examining and reporting on applications for the table is still, as it has always been, of great service to the Institution and is very thoroughly appreciated.

PUBLICATIONS.

The Smithsonian Institution and its branches distributed during the past year nearly 200,000 copies of their various publications. These were sent chiefly to libraries and learned institutions throughout the world and to a limited list of specialists in the subjects discussed. It would be impracticable, without a very great increase in the size of the editions, to meet the popular demand for copies of Smithsonian publications. In the case, however, of the publications issued by the Government bureaus under direction of the Institution, which are printed under congressional appropriations, the law provides that they may be purchased by all who desire them at a slight advance over the cost of printing by application to the Superintendent of Documents.

It is through its publications that the Smithsonian Institution performs one of its principal functions—the diffusion of knowledge. Two series of works are issued by the Institution proper at the expense of the Smithsonian funds, namely, Smithsonian Contributions

to Knowledge, in quarto, and Smithsonian Miscellaneous Collections, in octavo form. The editions of these series are necessarily limited in number for distribution almost entirely to a carefully selected list of libraries throughout the world, where they may be readily consulted by students and investigators. There is also issued, at the cost of Government appropriations, an annual report, in the general appendix of which is included a considerable number of papers, either original or selected from more or less inaccessible sources, reviewing the progress and present condition of the natural and physical sciences and other branches of human knowledge. Although the edition of the report is considerable, yet the supply is each year exhausted within a very short time after its publication.

Contributions to Knowledge.—The Langley Memoir on Mechanical Flight, referred to in my last report, had been put to press and was nearly ready for distribution at the close of the fiscal year. This work forms a quarto volume of over 300 pages and a hundred plates. The memoir was in preparation at the time of Mr. Langley's death in 1906 and part of it had been written by him, bringing the work down to May, 1896, the date of his demonstration that a machine heavier than air could be made to fly under its own power. The account of later experiments, from 1897 to 1903, was written by Mr. Charles M. Manly, who became Mr. Langley's chief assistant in 1898.

Miscellaneous Collections.—Twenty papers on various subjects have been added to the series of Smithsonian Miscellaneous Collections, including descriptions of a number of new species of animals obtained by the Smithsonian African expedition and the biological survey of the Panama Canal Zone, and several papers, mentioned elsewhere, giving some results of my studies and field work in Cambrian geology and paleontology, besides an interesting paper by Dr. Hrdlička on his anthropological investigations in Peru.

Smithsonian Tables.—In connection with the system of meteorological observations established by the Smithsonian Institution about 1850, a series of meteorological tables was compiled by Dr. Arnold Guyot at the request of Secretary Henry, and the first edition was published in 1852. Though primarily designed for meteorological observers reporting to the Smithsonian Institution, the tables were so widely used by physicists that it seemed desirable to recast the entire work. It was decided to publish three separate sets of tables, each containing the latest knowledge in the field which it covered, but together forming a homogeneous series. The first of the new series, Meteorological Tables, was published in 1893; the second, Geographical Tables, in 1894; and the third, Physical Tables, in 1896. In 1909 another volume was added, so that the series now comprises: (*a*) Smithsonian Meteorological Tables, (*b*) Smithsonian Geographical Tables, (*c*) Smithsonian Physical Tables, and (*d*)

Smithsonian Mathematical Tables. Each of these works has been published in revised editions, with such corrections and additions as became necessary by the advance of scientific knowledge.

The years that had elapsed since the publication of the first edition of the Physical Tables in 1896 had brought such changes in the material upon which these tables must be based that it became necessary to almost wholly recast the work for the fifth revised edition, which was published during the past year. Recent data and many new tables have been added, including several mathematical tables especially computed for this work, which forms a volume of about 350 pages.

Opinions on Zoological Nomenclature.—As stated with some detail in my last report, the Institution cooperates with the International Commission on Zoological Nomenclature by providing clerical assistance for its secretary and by the publication of the commission's opinions. During the past year two pamphlets were issued containing opinions 1 to 25 and 26 to 29, covering important questions of nomenclature that had been matters of discussion among zoologists. In connection with the summary of each opinion there is printed a statement of the case and the discussion thereon by members of the commission. The rules to be followed in submitting cases for opinion [1] as laid down by the commission are as follows:

(1) The commission does not undertake to act as a bibliographic or nomenclatural bureau, but rather as an adviser in connection with the more difficult and disputed cases of nomenclature.

(2) All cases submitted should be accompanied by (*a*) a concise statement of the point at issue, (*b*) the full arguments on both sides in case a disputed point is involved, and (*c*) complete and exact bibliographic references to every book or article bearing on the point at issue.

The more complete the data when the case is submitted the more promptly can it be acted upon.

(3) Of necessity, cases submitted with incomplete bibliographic references can not be studied and must be returned by the commission to the sender.

(4) Cases upon which an opinion is desired may be sent to any member of the commission, but—

(5) In order that the work of the commission may be confined as much as possible to the more difficult and the disputed cases, it is urged that zoologists study the code and settle for themselves as many cases as possible.

Harriman Alaska series.—The Institution has received from Mrs. Edward H. Harriman several thousand copies of volumes descriptive of the results of the Harriman expedition to Alaska in 1899. The expedition was organized in cooperation with the Washington Academy of Sciences, but entirely at the expense of Mr. Harriman. He invited as his guests 3 artists and 25 men of science representing various branches of research. The expedition sailed from Seattle

[1] Cases should be forwarded to the secretary of the commission, Dr. Ch. Wardell Stiles, U. S. Hygienic Laboratory, Washington, D. C.

on May 30, 1899, on a special steamer, and was gone about two months, visiting the Aleutian Islands, the Pribilof Islands, and the Eskimo settlements on the Asiatic and American shores. The journey was extended through Bering Strait and return, and covered 9,000 miles. Large and important collections were made of mammals, birds, insects, marine animals, fossil shells, and fossil plants. Studies were also made of the great glaciers and of the geological formations of the regions visited. The contents of the volumes received by the Institution are enumerated by the editor in the appendix to the present report. The series consists of 11 volumes, printed and illustrated in the best manner. These books, now known as the Harriman Alaska Series of the Smithsonian Institution, have been distributed, under special Smithsonian title pages, to a selected list of libraries throughout the world, the few copies of certain volumes remaining after such a distribution being held for sale in accordance with the terms of the agreement.

Museum publications.—The National Museum published its annual report, two volumes of proceedings and several bulletins, covering the usual wide range of subjects, but chiefly pertaining to zoology and botany.

Ethnological publications.—The Bureau of American Ethnology issued several bulletins, including part 2 of the Handbook of American Indians North of Mexico; part 1 of the Handbook of American Indian Languages; Antiquities of Central and Southeastern Mississippi Valley; Antiquities of the Mesa Verde National Park, and bulletins on other ethnological subjects.

Publications of historical and patriotic societies.—Annual reports of the American Historical Association and the National Society of the Daughters of the American Revolution were as usual communicated to Congress in accordance with law.

Advisory committee on printing and publication.—The committee on printing and publication has continued to examine manuscripts proposed for publication by the branches of the Institution, and has considered various questions concerning public printing and binding. Twenty-four meetings of the committee were held during the year and 115 manuscripts were passed upon. The personnel of the committee is as follows: Dr. Frederick W. True, Assistant Secretary of the Smithsonian Institution, chairman; Mr. C. G. Abbot, Director of the Astrophysical Observatory; Mr. W. I. Adams, disbursing officer of the Smithsonian Institution; Dr. Frank Baker, superintendent of the National Zoological Park; Mr. A. Howard Clark, editor of the Smithsonian Institution; Mr. F. W. Hodge, ethnologist in charge of the Bureau of American Ethnology; Dr. George P. Merrill, head curator of geology, United States National Museum;

and Dr. Leonhard Stejneger, head curator of biology, United States National Museum.

Allotments for printing.—The allotments to the Institution and its branches, under the head of "Public printing and binding," during the past fiscal year, aggregating $72,700, were, as far as practicable, expended prior to June 30. The allotments for the year ending June 30, 1912, aggregating $72,900, are as follows:

For the Smithsonian Institution, for printing and binding annual reports of the Board of Regents, with general appendixes	$10,000
For the annual reports of the National Museum, with general appendixes, and for printing labels and blanks, and for the bulletins and proceedings of the National Museum, the editions of which shall not exceed 4,000 copies, and binding, in half turkey or material not more expensive, scientific books and pamphlets presented to or acquired by the National Museum library	34,000
For the annual reports and bulletins of the Bureau of American Ethnology and for miscellaneous printing and binding for the bureau	21,000
For miscellaneous printing and binding:	
International exchanges	200
International Catalogue of Scientific Literature	100
National Zoological Park	200
Astrophysical Observatory	400
For the annual report of the American Historical Association	7,000
Total	72,900

LIBRARY.

The libraries of the Smithsonian Institution and of its several branches show an increase of about 18,000 volumes and pamphlets during the last year, being largely additions to the National Museum library and the Smithsonian deposit in the Library of Congress.

During the last five years improved methods and consolidation of work have been adopted in the interest of economy and efficiency, as discussed by the Assistant Secretary in the appendix to this report.

The library of the Bureau of Ethnology has been transferred from its former quarters in a rented building to the galleries of the main hall in the Smithsonian Building where it is much more convenient for reference, though the books are still arranged on temporary wooden shelves. It is hoped that this hall, which was originally planned for library purposes, may in the near future become available for such use. It is proposed, if necessary funds become available, to remove the wooden galleries, stairways, window sashes and frames, and book cases in this hall and substitute fireproof bookstacks, stairways, and windows. The new stacks and cases would accommodate the books belonging to the several bureaus under the direction of the Institution, including a part of the library of the National Museum, which should be kept in a central location. They would also provide a safe place to assemble the

Smithsonian books constantly used by the bureaus, of which several thousand are now scattered through various rooms in the Smithsonian Building.

LANGLEY MEMORIAL TABLET.

The memorial tablet authorized by the Regents to be erected in the Smithsonian building commemorative of the aeronautical work of the late Secretary Langley has not yet been completed. A design for the tablet has, however, been prepared and is under consideration by the committee appointed for the purpose.

INTERNATIONAL CONGRESSES AND CELEBRATIONS.

The Institution each year receives invitations to numerous scientific congresses and celebrations in the United States and abroad, but as funds are not available for the expenses of delegates few of these invitations can be accepted. In some instances, however, it is possible to arrange for representation by collaborators of the Institution who are visiting the localities on official or private business.

Congress of Americanists.—Dr. Aleš Hrdlička was appointed representative of the Smithsonian Institution and the National Museum and delegate on the part of the United States at the second session of the Seventeenth International Congress of Americanists, held in the Museo Nacional, Mexico City, September 8 to 14, 1910. He presented an account of his recent explorations in Peru, and also described the uncovering of an especially interesting sepulchre which he had been invited by the Mexican authorities to open in the ancient ruins of San Juan Teotihuacan.

The meeting was held in the Museo Nacional, and was well attended, especially by scientific men from the United States.

Dr. C. W. Currier, of Washington, was also designated delegate of the United States and a representative of the Smithsonian Institution at the above congress.

International American Scientific Congress.—Mr. Bailey Willis, as delegate on the part of the Smithsonian Institution, attended the International Scientific Congress which was held at Buenos Aires, Argentina, July 10 to July 25, 1910.

Geological Congress.—In August, 1910, the Eleventh International Geological Congress met in Stockholm. Dr. George F. Becker, of the United States Geological Survey, was a delegate on the part of the Smithsonian Institution. The congress was more largely attended than any of its predecessors, and nothing could exceed the hospitality of its reception. The principal subjects of discussion were the distribution and extent of the iron ore deposits of the world, Cambrian paleontology, and the change of climate since the last maximum of glaciation. To all of these subjects painstaking

contributions were made from every quarter of the globe, and the publications of the congress contain the most authoritative exposition of the present state of knowledge on these vital questions. Among the papers presented to the congress was one expressing my view on "the abrupt appearance of the Cambrian fauna."

Zoological Congress.—The Seventh International Zoological Congress was held at Graz, Austria, in August, 1910. The delegates on the part of the United States and the Smithsonian Institution and National Museum were Dr. H. H. Field, Dr. W. R. Kellicott, Dr. Ch. Wardell Stiles, and Mr. Austin H. Clark. About 600 members were present at this congress, of whom about 60 were from the United States, the majority of these representing scientific societies or educational institutions. To facilitate its labors, the congress was divided into sections, each section representing a definite subject or group of subjects. Papers of general interest were read in the Stephaniensalle, a large hall in the center of the city, while papers of more restricted scope were presented in the various lecture rooms of the university. Taken as a whole, the papers read were of a distinctly progressive nature, the authors, especially the younger ones, showing a marked disposition to depart from the time-honored and accepted lines of work and thought, and to approach their subjects from entirely new view points.

Congress of Bibliography and Documentation.—Mr. Paul Brockett, assistant librarian of the Institution, who was appointed a delegate to the International Congress of Bibliography and Documentation at Brussels, August 25 to 27, 1910, attended the congress and submitted a report on its proceedings, which is printed in the appendix.

Congress of Archivists and Librarians.—An International Congress of Archivists and Librarians was held at Brussels August 29 to 31, 1910, when the Institution was represented by Mr. Paul Brockett, whose report appears in the accompanying appendix.

MISCELLANEOUS.

Hambach collection of fossils.—The Institution has secured from Dr. Gustav Hambach, of St. Louis, a collection of about 20,000 specimens of fossil echinoderms and other animals, with more than 100 types. Almost all the fossils were collected in the Mississippi Valley and are the choicest obtainable. The series of Blastoids, a group of fossil echinoderms, is unique. The collection contains representatives of the various classes of animals, among which may be mentioned many insects from the Cenozoic formation in Colorado; many specimens of Paleozoic fishes, including an especially interesting series of teeth and spines; a complete series of fossil sea-urchins; the jaws of a Carboniferous batrachian over a foot long, and of a mastodon.

Chinese photographs.—The Institution has received a valuable series of large photographic negatives taken by Mr. Bailey Willis in connection with his geological work in China. These photographs represent scenery, particularly landscapes in which the loess formation is conspicuous, and also Chinese buildings, monuments, and the people themselves. The route of the expedition through the Provinces of Chihli, Shansi, and Shensi led through the district of the loess formation and some remote mountain regions of great interest and scenic beauty. Copies of many of these photographs have been furnished at cost to various institutions for educational purposes.

NATIONAL MUSEUM.

The most important item of interest in connection with the National Museum during the year was the completion on June 20, 1911, of all structural work on the new building, just six years after the excavations for the foundation were commenced. On another page the Assistant Secretary in charge of the Museum mentions the very superior character of the building for museum purposes. It is massive and imposing in appearance. It is well lighted. There is little room that can not be utilized. More than one-half of the 10 acres of floor space is placed at the service of the public in the interest of popular education, while the remaining space is used for reserve collections and laboratories of the scientific departments and divisions and for the maintenance of the building and the operation of the heating, lighting, and ventilating plant. The greater part of the natural-history collections, including ethnology, have been removed to the new structure; while in the old building space is now afforded for the proper display of objects pertaining to the arts and industries, including the collection illustrating the graphic arts and the art textiles, and also for the large and interesting series illustrative of American history. Although there has as yet been no formal dedication of the new building, the exhibition halls are being opened to the public one after another as the reinstallation of the exhibits progresses. It is planned in the near future to admit visitors to the new building, for a portion of the day at least, on Sundays in order that the people of Washington may be afforded a long-desired opportunity to study the national collections in their leisure hours.

The number of visitors to the new building during the year was 151,112 and to the old building 207,010.

The auditorium in the new building has been utilized for meetings of various scientific bodies and important lectures. The First American International Humane Congress was held there from October 10 to 15, 1910, and in connection therewith an interesting exhibit was displayed.

The accessions received by the Museum during the year include more than 200,000 specimens of animals and plants, besides 6,600 specimens relating to geology and paleontology, and about 17,000 anthropological objects. To the National Gallery of Art were added 94 paintings and engravings. In addition, about 1,600 objects of art and anthropology were accepted by the Museum as loans for exhibition. Among important accessions that merit special mention was a collection of 3,400 ancient crania, 6,000 bones, and 1,500 archeological objects, gathered chiefly in Peru by Dr. Hrdlička, as mentioned on another page. Other interesting archeological objects were received from the ancient pueblos of Arizona and New Mexico, besides a valuable series of skulls and skeletons from Arkansas and Mississippi. About 50,000 specimens of mollusks, collected in Alaska by Dr. William H. Dall between the years 1871 and 1899, were received during the year, together with many thousands of Japanese mollusks from the Imperial University of Japan.

Many other interesting accessions of objects of zoology, botany, geology, and anthropology are referred to by the Assistant Secretary in his report.

The paintings of the National Gallery of Art, exhibited in the middle hall of the new building, continue to attract much public attention. Mr. William T. Evans has added 13 canvases to his notable gift, which now comprises 127 pictures, representing 90 contemporary American painters.

Mr. Charles L. Freer has also added a large number of objects of oriental art to his most important gift to the Nation, the entire collection remaining, however, in his keeping at Detroit, Mich.

The great exhibition halls of the new building will afford opportunity for the proper display of the national collections illustrative of natural history, and especially such large and striking objects as groups of mammals, skeletons of fossil vertebrate animals, and groups representing the habits and customs of the races of mankind. The collections pertaining to the ethnology of America had increased year by year so rapidly in extent that they long ago outgrew the space that could be allotted to them in the old building. In the new structure they are installed with adequate regard to their size and importance.

The loan collection of laces and other art textiles has been largely increased numerically and in variety of contents under the able supervision of Mrs. James W. Pinchot, who initiated the movement.

The Museum has continued the distribution of collections of duplicate specimens to schools and colleges throughout the country. About 3,000 specimens, chiefly recent and fossil animals, were thus distributed during the year, and about 23,500 duplicate specimens were used in making exchanges.

Considerable progress has been made in arranging the large quantities of natural-history specimens collected by the Smithsonian African expedition and the Smithsonian biological survey of the Panama Canal Zone. Some of the African mammals of greatest public interest have been mounted in groups.

BUREAU OF AMERICAN ETHNOLOGY.

The Bureau of American Ethnology has been engaged for a number of years in scientific studies of the American aborigines, including their arts and industries, government, religious and sociological systems, and languages, as well as their mental and physical characteristics, their history, and antiquities. Much has been accomplished in this direction, and many of the results have been permanently recorded and disseminated by means of publication; but a large body of material still awaits final study and arrangement, and much work remains to be done both in the field and in the office.

The investigations of the bureau have, however, reached a stage at which it has been found possible to summarize some of the results in the form of handbooks, designed especially for the use of schools and unprofessional students. The demand for those already issued, or about to be published, is very large. Many changes are taking place among the Indians, owing to their advance in civilization, and for that reason the researches are being pressed with all possible speed while knowledge of primitive conditions is still available. The Indians form one of the great races of mankind, and the world properly looks to our Government to gather and record accurate knowledge of this branch of the human family, while by many the work of the Bureau of American Ethnology is regarded as the basis of American history.

One of the immediate demands upon the bureau is vigorous activity in the exploration and preservation of antiquities, especially in Arizona, Colorado, and New Mexico, before these important and most interesting ruins are entirely destroyed by vandalism or the elements.

Another important work that should speedily be undertaken is an ethnological study of the Indians and Eskimo of Alaska before the advent of greater numbers of white people shall have so modified them as to destroy their primitive character. So also there is need of further activity in the study of the few survivors of Indian tribes in the Middle West.

The bureau has conducted various lines of field work among the tribes which composed the Creek Confederacy of the Southern States; the Tewa Indians of the Rio Grande Valley, New Mexico;

the Winnebago Indians of Wisconsin and Nebraska; the Piegan, Blackfeet, Cheyenne, and Menominee Indians of the Algonquian family; the Chippewa Indians, especially with reference to their music; the Osage Indians, now in Oklahoma, and the Iroquois in New York.

A study of the past and present population of the Indians, with the various causes of their decrease is being conducted.

Some very interesting studies were made in Cuba, indicating that the western end of the island, including the Isle of Pines, was once inhabited by a cave-dwelling people of low culture and without agriculture. It is believed that these people were in that condition at the time of the visit of Columbus, and that they were the survivors of a cave-dwelling population once occupying all of Cuba and represented in Porto Rico and elsewhere in the West Indies.

The Smithsonian Institution, through its Bureau of American Ethnology in cooperation with the Archæological Institute of America, has carried on excavations in prehistoric cliff dwellings and pueblo ruins in New Mexico. In one locality these dwellings extend along the walls of a canyon for about 2 miles. In cooperation with the Colorado Cliff Dwellers' Association, the Institution excavated and repaired the celebrated Balcony House in Colorado. Excavations have also been made in newly discovered cliff dwellings and other archeological remains in northwestern Arizona.

INTERNATIONAL EXCHANGES.

An idea of the magnitude of the work conducted by this branch of the Institution may be obtained from the statement that 228,698 packages were handled during the year, an increase over the number for the preceding 12 months of 7,073. The weight of these packages was 560,808 pounds, a gain of 76,124 pounds.

The total available resources for carrying on this work were $36,954.99, $32,200 of which was appropriated by Congress, and $4,754.99 was derived from the exchange repayments to the Institution.

Several changes made during the year in the routine of the Exchange Office have resulted in a more economical and efficient administration of the service.

It was stated in the last report that the German authorities had under consideration the founding in Berlin of an establishment to promote cultural relations between Germany and the United States, and that one of its functions would be to conduct on behalf of Germany the international exchange of publications which the Smithsonian Institution carries on for the United States. This establishment, which is known as the Amerika-Institut, was organized in the fall of 1910 and the exchange duties were assumed by it on January

1, 1911. The exchange agency maintained by the Smithsonian Institution in Leipzig was discontinued on the latter date.

Packages for Luxemburg and Roumania have heretofore been distributed through the Leipzig agency. Since its discontinuance the Amerika-Institut has been good enough to assume charge of the distribution of packages in Luxemburg, and the Academia Romana at Bucharest has been asked to act as the Roumanian exchange intermediary.

The Japanese Government has transferred the exchange agency of that country from the Department of Foreign Affairs to the Imperial Library at Tokyo. The regular series of United States official documents, which had been sent to the former for a number of years, has also been deposited in the Imperial Library.

The Government of the United Provinces of Agra and Oudh, Allahabad, India, has, at its request, been listed to receive a partial set of United States official publications, the total number of such depositories being now 34. The number of depositories of full sets of governmental documents remains the same as at the close of last year, namely, 55.

The Governments of the Argentine Republic, Denmark, and Great Britain have entered into the immediate exchange of their parliamentary record during the past year, 29 countries now taking part in this exchange with the United States.

Important collections of foreign publications have, through the efforts of the Exchange Office, been obtained during the past year for the Library of Congress and for several other establishments of the Government.

NATIONAL ZOOLOGICAL PARK.

The accessions to the Zoological Park during the past year were 335 animals, and the total number of animals on hand June 30, 1911, was 1,414, representing 376 species of mammals, birds, and reptiles, about 20 species being new to the park.

Among the important additions to the collections I may mention a pair of northern fur seals from Alaska, a hippopotamus, an East African buffalo, three prong-horn antelopes, a pair of reindeer, and a large Asiatic macaque monkey.

The number of visitors was 521,440, or a daily average of 1,428. As an indication of the educational value of the park, it may be mentioned that it was visited by 169 schools, classes, etc., with 4,966 pupils, an increase of about a thousand over the year preceding. While most of the classes were from the District of Columbia, some of them belonged in various parts of the country, including all the New England States, New York, Pennsylvania, and North Carolina.

The equipment of the Zoological Park, both as regards the accommodations for the collections and facilities for visitors, is still inadequate and is inferior to that of other establishments of the kind of equal importance.

Many of the animals are kept in temporary quarters that are insufficient in size, more or less insanitary, and quite costly to maintain. This is particularly true of the fine series of birds, which includes some of exceptional interest and rarity. The rough temporary building in which they are now kept is too small for the exhibition of the entire collection and the conditions are such that it is difficult to keep the birds in a good state of health. In a suitable structure the bird collection would be one of the most attractive features of the park.

Permanent paddocks are also needed for the hardy deer, wild sheep, goats, and cattle, which are now scattered in temporary inclosures, some of them altogether unsuitable.

A new bridge across Rock Creek is urgently needed to replace the present temporary log structure, and it should be of a permanent character and sufficiently wide to provide for the greatly increased travel when the valley of Rock Creek is fully developed.

The roadways and walks in the park were greatly improved at the cost of a special appropriation for that purpose. Nearly a mile of the roads were treated either by reshaping and supplying a top layer of stone or by regrading and furnishing the entire thickness of roadbed metal. About $1\frac{3}{4}$ miles of walks were also laid or repaired and steps were constructed where grades had before been too steep. A considerable amount of work was also done to provide proper drainage.

ASTROPHYSICAL OBSERVATORY.

The Astrophysical Observatory has been engaged in three principal lines of work during the year.

Observations by the spectrobolometric method were continued in order to confirm the view referred to in last year's report that the determinations of the intensity of the solar radiation outside the earth's atmosphere are independent of the observer's altitude above sea level, provided the conditions are otherwise good. Observations for the "solar constant" were accordingly taken on Mount Whitney in the summer of 1910, where opportunity was afforded also for measurements of the brightness of the sky by day and by night, the influence of the water vapor on the sun's spectrum, and the distribution of the sun's energy spectrum outside the atmosphere. The results of these observations show no discrepancy due to altitude between Mount Wilson (5,840 feet) and Mount Whitney (14,502 feet).

It also seemed important to confirm by further observation the variability of the solar constant of radiation. Observations were accordingly continued daily at Mount Wilson until November 10, 1910,

and renewed again on June 11, 1911, which tend to confirm the conclusion that the sun's output of radiation varies from day to day in a manner irregular in period and quantity. Assurance seems now complete that this latter result will be tested during the next fiscal year by long-continued daily observations taken simultaneously at two widely separated stations, where the atmosphere is believed to be specially favorable for such research. The definite determination of the laws governing the apparent variability of the "solar constant" it is expected will be of much value in the probable forecast of climatic conditions from year to year.

Measurements have also been made of the transparency, for long wave radiation, of columns of air containing known quantities of water vapor. This line of research promises highly interesting results.

As mentioned on another page, arrangements have been made with several observatories, widely separated through the world, for the use of the standard silver-disk secondary pyrheliometer designed by the director of the Smithsonian Astrophysical Observatory. It is hoped to thus secure not only uniformity of radiation measures, but also a more exact knowledge of solar radiation and the influence of the terrestrial atmosphere upon it.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

The International Catalogue of Scientific Literature publishes, through the cooperation of countries in all parts of the world, a current classified index to the literature of science. Seventeen volumes have been published annually, beginning with the literature of 1901. The organization consists of a central bureau in London and regional bureaus established in and supported by the 32 countries taking part in the enterprise. Supreme control of the catalogue is vested in an international convention, which met in London July, 1905, and July, 1910, and is to meet every tenth year hereafter. The second international convention met in London at the rooms of the Royal Society on July 12 and 13, 1910, and Mr. Leonard C. Gunnell, assistant in charge of the United States regional bureau, was sent by the Institution as the delegate from the United States. The convention decided that on account of the success already achieved by the International Catalogue and the great importance of the objects promoted, the enterprise would be continued. Attention was called to the urgent need of a permanent fund to aid in carrying on and extending the work. It was pointed out that although various regional bureaus for the collection of material were supported by the countries in which they were located, the maintenance of the central bureau for general administration and actual publication of the 17 annual volumes was dependent entirely on the funds derived from the sub-

scribers to the published volumes. Though every care has been used to edit and publish the work in the most economical way, the income of the central bureau has proved to be insufficient to meet current expenses and in addition pay interest on approximately $35,000 of borrowed capital.

As a more detailed report of the work of the bureau and of the proceedings of the convention will be found in the appendix to this report, it will be sufficient here to call attention to the great value and importance of the work, and to say that it would be difficult to find an enterprise more deserving of endowment. A capital fund, yielding an annual income of from $5,000 to $10,000, would enable the central bureau not only to broaden the scope of the catalogue but also to reduce the subscription price now charged for the annual volumes. This charge is $85 per year which, although not large when the amount of matter published is considered, is found to be far beyond the means of many who would otherwise be glad to avail themselves of this important aid to scientific research.

The Smithsonian Institution has a peculiar interest in the International Catalogue, for the reason that the original idea was conceived by the first Secretary of the Institution in 1855. The Royal Society through its Catalogue of Scientific Papers later partly carried out Secretary Henry's idea. Experience proved that the enterprise was too great for any one society, or, indeed, any one nation, to undertake, and the Smithsonian Institution, representing the United States, joined in the movement to make the work international.

The history of this international movement is briefly as follows:

The British foreign office in 1894, at the instance of the Royal Society, requested the United States Government, through the Department of State, to send delegates to a conference to be held in London in 1896. The matter was referred to the Smithsonian Institution, and the late Prof. Simon Newcomb and Dr. John S. Billings were sent as delegates. The second conference was held in 1898, and Dr. Cyrus Adler, librarian of the Smithsonian Institution, attended as a delegate.

In 1901, when success or failure depended on obtaining the cooperation of the United States in the enterprise, the Smithsonian Institution agreed to and did support a regional bureau from that time until 1906, when Congress made its first annual appropriation to carry on the work in this country. It will thus be seen that in each step the United States has, through the Smithsonian Institution, been prominent in the movement, and it would be a matter of much gratification if now that the enterprise has been so auspiciously started it could be further aided by an endowment fund originating in this country.

NECROLOGY.

Melville Weston Fuller.

It becomes my duty to record here the death of Chief Justice Melville Weston Fuller, Chancellor of the Smithsonian Institution, who was born at Augusta, Maine, February 11, 1833, and died at his summer home, Sorrento, Maine, July 4, 1910. For 22 years prior to his death, Chief Justice Fuller had been deeply interested in the welfare of the Institution, and only on one occasion was he absent from a meeting of the Regents during the entire period of his service as a member of the board.

During his long and useful life Justice Fuller served his country faithfully in several civil offices of trust and as Chief Justice of the Supreme Court of the United States. His achievements as a jurist were most adequately portrayed by the resolutions and eulogies pronounced in his memory at a meeting of members of the bar of the Supreme Court on December 10, 1910, and at the session of the Supreme Court on January 3, 1911.

The Board of Regents of the Smithsonian Institution expressed their sorrow in the following words of tribute adopted at the annual meeting of the board on December 8, 1910:

Whereas the Board of Regents of the Smithsonian Institution have received the sad intelligence of the death, on July 4, 1910, of Melville Weston Fuller, Chief Justice of the United States, and for twenty-two years chancellor of the Institution: Therefore be it

Resolved, That we desire here to record our profound sorrow at the severing of the tie that has bound us to him for so long a period of honored service; that we feel keenly the loss of a wise presiding officer, whose vast store of learning and gracious dignity have proved so invaluable in the deliberations of this board, and whose loyal interest in the Smithsonian Institution has been a source of inspiration to his colleagues.

Resolved, That we share in the grief of the Nation at the passing away of one who was at once a distinguished leader of the greatest legal tribunal of our land, an eminent jurist, a patriotic citizen, a shining example of Christian gentleness, and who also possessed so charming a personality as a man and as a friend.

Resolved, That we respectfully tender to the members of the family of our late associate our sincerest sympathy in their great bereavement.

Resolved, That an engrossed copy of these resolutions be transmitted to the family of the late chancellor.

Respectfully submitted,

Charles D. Walcott, *Secretary.*

Appendix I.

REPORT ON THE UNITED STATES NATIONAL MUSEUM.

Sir: I have the honor to submit the following report on the operations of the United States National Museum for the fiscal year ending June 30, 1911:

COMPLETION AND OCCUPATION OF THE NEW BUILDING.

It is gratifying to be able to report the completion of all structural work on the new building for the Museum on June 20, 1911, just six years after the excavations for its foundations were commenced. While the time limit originally estimated was somewhat exceeded on account of delays in the fulfillment of certain contracts, the work was purposely conducted slowly in order to insure entire stability and permanency of construction, which it is confidently believed have been secured. The building is massive and imposing in appearance, a notable addition to the group of Government structures at the Capital, and has already been proved to be admirably adapted to the purposes for which it was designed.

There is comparatively little room in the building that can not be utilized. Of the approximately 10 acres of floor space which it contains, fully one-half has been allotted to the public in the interest of popular education. The other half, after deducting the area required for the maintenance and operation of the building, is assigned to the storage of the reserve collections and to the laboratories. The occupation of the building did not await its final completion, but was begun during the summer of 1909, and has been continued as rapidly as the necessary furniture could be provided.

The work done on and in connection with the building during last year comprised the finishing of the rotunda, the south approaches, and the auditorium; the painting of the interior plastered walls and ironwork; and, under the direction of the officer in charge of public buildings and grounds, the grading and sodding of the grounds immediately surrounding the building and the construction of roads and walks leading to the several entrances.

By the close of the year essentially all of the reserve collections and all of the laboratories of the several divisions of anthropology, zoology, geology, and paleontology had been established in the new building, as had also most of the administrative offices which are to be located there. The collections had, moreover, been nearly all arranged in a manner convenient for study and reference, and in greater part had received their permanent systematic installation. Much remains to be done, however, in perfecting this arrangement and in completing the catalogues and indexes.

The exhibition collections had also been moved with the exception of the American mammals, the birds, the marine invertebrates, the osteological specimens, the fossil plants, the building stones, the gems, and a small section of ethnology. The only public installations that had been completed in the new building, besides the paintings of the National Gallery of Art, were, however, of ethnology, which occupied the sides and ends of the middle hall on the

main floor, and most of the two adjacent ranges. To these halls in greater or less part the public had been admitted from March 17, 1910, when the building was first opened. Work was actively progressing in the preparation of the exhibits for all of the other branches, the delays being due in large measure to the slow rate at which furniture was supplied, and had been well advanced for archeology, mineralogy, and the fossil vertebrates.

ADDITIONS TO THE COLLECTIONS.

The permanent acquisitions received during the year comprised approximately 228,642 specimens and objects, of which 204,540 were of animals and plants, 6,647 were geological and paleontological, 17,361 belonged to the several divisions included in the department of anthropology, and 94 were paintings and engravings presented to the National Gallery of Art. In addition, 1,629 objects of art and anthropology were accepted as loans for exhibition.

One of the most important accessions of the year resulted from an investigation in Argentina, conducted under the auspices of the Smithsonian Institution by Dr. Aleš Hrdlička, curator of physical anthropology, partly in conjunction with Mr. Bailey Willis as geologist, for the purpose of determining the nature and value of the evidence relating to man's antiquity in that country. The skeletal and archeological remains attributed to early man or his forerunners preserved in the museums were studied, the more important localities where such remains have been discovered were visited, and on the journey to and from Argentina short stops were made in Brazil, Peru, Panama, and Mexico. Some 3,400 ancient crania, 6,000 long and other bones, and 1,500 archeological objects of human manufacture composed the collection brought to Washington. A large number of prehistoric utensils, implements, ornaments, examples of weaving, etc., obtained by Dr. J. W. Fewkes during excavations in the Navaho National Monument and at the ancient Hopi pueblo of Wukoki at Black Falls, Little Colorado River, Ariz., were transferred by the Bureau of American Ethnology. Collections of a similar character, but including ancient human crania and skeletons, from the northeastern pueblo region of New Mexico, were received from the School of American Archæology of the Archæological Institute of America, at Santa Fe, and a valuable series of skulls and skeletons from Arkansas and Mississippi was presented by Mr. Clarence B. Moore.

Two interesting ethnological collections, one from Liberia the other from Abyssinia, were lent for exhibition by Mr. George W. Ellis, jr., and Mr. Hoffman Philip, respectively, and a number of specimens relating to the Indians of North America were acquired by gift and purchase.

The final shipments from the Smithsonian African expedition, which arrived in the early part of the year, contained several thousand specimens of mammals, birds, reptiles, fishes, and mollusks. The notable collection of mammals belonging to Dr. C. Hart Merriam and consisting of about 5,800 skins, 6,000 skulls, and 100 complete skeletons, was secured through the generosity of Mrs. Edward H. Harriman, of New York, by whom it was purchased and donated to the Institution. The other principal additions of mammals were from British East Africa, Abyssinia, and China; while of birds the more important contributions were from North and Central America, the Philippine Islands, and China. The United States Biological Survey and the United States Bureau of Fisheries transmitted many reptiles from various parts of the United States and Mexico, and the latter also an interesting series from the Philippines. The fishes received were mainly from explorations by the Bureau of Fisheries in the eastern part of the United States. Large numbers of

insects were deposited by the Bureau of Entomology, and important collections of hymenoptera were presented by Mr. S. A. Rohwer and Mr. P. R. Myers.

An especially noteworthy accession consisted of the collection of mollusks made in Alaska by Dr. William H. Dall while in the field for the United States Coast and Geodetic Survey, and later for the United States Geological Survey, between 1871 and 1899. It comprises about 15,000 lots and 50,000 specimens, and is undoubtedly the largest collection of the shells of moderate depths of water that has ever been assembled from that region. Another extensive contribution of mollusks, consisting of many thousands of Japanese specimens, was obtained from the Imperial University of Tokyo. Important type collections, recently described, of isopod crustaceans, medusæ, hydroids, and siphonophores, from explorations by the steamer *Albatross* in the Pacific Ocean and at the Philippine Islands, were transferred by the Bureau of Fisheries. Decapod crustaceans, representing a large number of species, were received from the Indian Museum at Calcutta; many isopods from several French explorations, including the Charcot expedition to the Antarctic Ocean, were obtained from the Muséum d'Histoire Naturelle at Paris; and an interesting series of recent crinoids was secured from the Zoological Museum at Copenhagen.

The collection of plants was increased by over 38,000 specimens, of which the largest contributions were from the biological survey of the Panama Canal Zone and the Department of Agriculture, though many specimens were obtained from the Bureau of Fisheries, and by gift and exchange. On the biological survey of the Canal Zone, which is being carried on under the auspices of the Smithsonian Institution, the Museum was represented during the year by one member of its staff, Mr. W. R. Maxon, assistant curator of plants. Mr. Maxon spent about two and one-half months in the field, working in conjunction with Mr. Henry Pittier, who is in charge of the botanical investigations, and in view of the richness of the region the exploration yielded exceedingly important results. Dr. J. N. Rose, associate curator of plants, and Dr. Paul Bartsch, assistant curator of mollusks, were members of an expedition by the Bureau of Fisheries steamer *Albatross*, which visited Guadaloupe Island, proceeded down the outer coast of Lower California and ascended the Gulf of California for a considerable distance. Valuable series of marine animals and of plants were secured, the former mostly by means of dredging, the latter during stops made along the coast.

The accessions in geology and mineralogy from the Geological Survey and other sources contained much interesting material and a number of type specimens. Especially important were several type series of Cambrian fossils described by Dr. Charles D. Walcott, and included in the noteworthy discoveries resulting from his recent explorations in British Columbia. Investigations in Kentucky and Tennessee by Dr. R. S. Bassler and Mr. Frank Springer yielded valuable collections of Silurian and Mississippian fossils. In vertebrate paleontology the more important additions consisted of mammalian and reptilian remains obtained in exchange.

An interesting series of articles of nickel produced by the late Joseph Wharton, of Philadelphia, who was recognized as the leader in the technology of this metal, was received as a donation from the executors of his estate. This collection, which had been preserved by Mr. Wharton in a cabinet at his home, comprises over 60 pieces, including pure nickel in several forms, harness and door trimmings, household utensils, forceps, magnetic needles, coinage blanks, etc., and is of much historical value.

The historical collection was greatly enriched, mainly by loans, and, by extending the exhibition space into a second hall, its installation has been much

improved. Rear Admiral R. E. Peary, United States Navy, retired, deposited the many medals conferred upon him by various geographical societies in recognition of his service to science in arctic exploration; the silver model of a ship and three loving cups presented to him; and two of the flags that he carried to the North Pole in 1909; all of which have been arranged together in a single case. Important additions to the collection of memorials of the Bailey-Myers-Mason family were received from Mrs. Julian James; valuable memorials of the Salter and Codwise families of colonial and revolutionary New York and New Jersey were lent by Miss Louise Salter Codwise; and interesting relics of the Schenck family of New Jersey dating back three generations were contributed by Dr. Clara S. Ludlow. The Gustavus Vasa Fox collection of Russian memorials was materially increased, and 11 pieces of furniture that once belonged to Gen. Rufus Putnam were received as a gift from his great-grandson, the late Judge E. M. P. Brister. An inhaler of the type used by Dr. William T. G. Morton in 1846, in the first operation which he performed with the use of ether as an anesthetic, and two busts of Dr. Morton were presented.

NATIONAL GALLERY OF ART.

The paintings of the National Gallery of Art continue to be exhibited in the large middle hall of the new building, the central part of which was specially fitted up for the purpose in 1910. While these quarters are already too restricted for the needs of the Gallery, the excellent lighting of this space makes possible an entirely satisfactory installation, which has attracted much attention.

Mr. William T. Evans, of New York, added 13 canvases to his notable collection of the works of contemporary American painters, which now comprises 127 pictures representing 90 artists. Mr. Evans also presented 81 examples of a series of 100 proofs designed to illustrate the work of the foremost American wood engravers, which he announced some time ago his intention to contribute. Mr. Charles L. Freer, whose important gift to the Nation of American and oriental art still remains in his keeping at Detroit, Mich., secured many valuable additions for his collection during an extended trip abroad, much of which was spent in China. The Gallery was fortunate in obtaining several interesting loans, including numerous examples of the paintings of early masters, and contributed to a number of important exhibitions held in other cities.

ART TEXTILES.

The loan collection of laces and other art textiles, which occupies one of the northern ranges in the older Museum building, was very largely increased both numerically and in the variety of its contents. Thirty-two loan contributions and three gifts, comprising 249 specimens, many of great beauty and value, brought the total number of specimens on exhibition up to 1,007. The supervision of the collection has been continued by Mrs. James W. Pinchot, to whose initiative and subsequent efforts, with the active cooperation of a number of ladies of Washington, the movement owes its success.

MISCELLANEOUS.

Of duplicate specimens taken from the collections, over 3,000, principally of recent animals and fossils, were distributed to schools and colleges, and about 23,500 were used in making exchanges. Approximately 24,600 specimens of various kinds were sent for study to specialists both in this country and abroad, mainly to be worked up and identified for the Museum.

The total number of visitors to the older Museum building was 207,010, to the Smithsonian building 167,085, and to the new Museum building 151,112. Considering that the buildings have been opened only during working hours on week days, this is to be regarded as a fair attendance. That it was smallest at the new building was owing to the fact that less than one-sixth of the exhibition space had been made ready for the public.

The publications issued comprised the annual report for 1910, two volumes of Proceedings, five bulletins, one volume of Contributions from the National Herbarium, and a large number of separate papers belonging to three unfinished volumes of Proceedings and two of Contributions. With the exception of the annual report, all were descriptive of material in the Museum collections. The number of copies of the various publications distributed was over 110,000.

By the addition of 6,127 books, pamphlets, and periodicals, the Museum library was increased to 40,211 volumes and 66,074 unbound publications.

The auditorium in the new building was used on several occasions for meetings of important scientific bodies. The sessions of the First American International Humane Congress, in connection with which an interesting exhibit was installed, were also held here from October 10 to 15, 1910.

The position of head curator of the department of biology, made vacant by the designation of Dr. F. W. True as an Assistant Secretary of the Institution on June 1, was filled by the appointment of Dr. Leonhard Stejneger, curator of reptiles and batrachians. For convenience of administration, the divisions of invertebrate paleontology, vertebrate paleontology, and paleobotany were combined, under the title of sections, in a single division of paleontology, with Dr. R. S. Bassler as curator.

Respectfully submitted.

RICHARD RATHBUN,
Assistant Secretary in Charge, U. S. National Museum.

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

NOVEMBER 18, 1911.

Appendix II.

REPORT ON THE BUREAU OF AMERICAN ETHNOLOGY.

Sir: I have the honor to present the following report on the operations of the Bureau of American Ethnology during the fiscal year ending June 30, 1911, conducted in accordance with the provisions of the act of Congress approved June 25, 1910, authorizing the continuation of ethnological researches among the American Indians and the natives of Hawaii, under the direction of the Smithsonian Institution, and in accordance with the plan of operations approved by the Secretary June 15, 1910.

The systematic ethnological researches of the bureau were continued during the year with the regular scientific staff, consisting of nine ethnologists, as follows: Mr. F. W. Hodge, ethnologist in charge; Mr. James Mooney, Dr. J. Walter Fewkes, Mrs. Matilda Coxe Stevenson, Mr. J. N. B. Hewitt, Dr. John R. Swanton, Dr. Truman Michelson, Dr. Paul Radin, and Mr. Francis La Flesche. In addition the services of several specialists in their respective fields were enlisted for special work, as follows:

Dr. Franz Boas, honorary philologist, with several assistants, for research in connection with the preparation and publication of the Handbook of American Indian Languages.

Miss Alice C. Fletcher and Mr. Francis La Flesche, for the final revision of the proofs of their monograph on the Omaha Indians for publication in the twenty-seventh annual report.

Miss Frances Densmore, for researches in Indian music.

Mr. J. P. Dunn, for studies of the tribes of the Middle West.

Mr. John P. Harrington, for researches among the Mohave Indians of the Colorado Valley.

Rev. Dr. George P. Donehoo, for investigations in the history, geography, and ethnology of the tribes of Pennsylvania for incorporation in the Handbook of American Indians.

Mr. William R. Gerard, for studies of the etymology of Algonquian place and tribal names and of terms that have been incorporated in the English language for use in the same work.

Prof. H. M Ballou, for bibliographic research in connection with the compilation of the List of Works Relating to Hawaii.

Mr. James R. Murie, for researches pertaining to the ethnology of the Pawnee Indians.

The systematic ethnological researches by members of the regular staff of the bureau may be summarized as follows:

Mr. F. W. Hodge, ethnologist in charge, in addition to conducting the administrative work of the bureau, devoted attention, with the assistance of Mrs. Frances S. Nichols, to the final revision of the remaining proofs of Part 2 of the Handbook of American Indians (Bulletin 30), which was published in January, 1911. This work met with such great popular demand that the edition of the two parts became exhausted immediately after publication, causing the bureau much embarrassment owing to the thousands of requests that it has

not been possible to supply. To meet this need in part, the Senate, on May 12, adopted a concurrent resolution authorizing the reprinting of the entire handbook, and at the close of the fiscal year the resolution was under consideration by the Committee on Printing of the House of Representatives. The Superintendent of Documents has likewise been in receipt of many orders for the work, necessitating the reprinting of part 1 some months after its appearance, and about the close of the fiscal year another reprint of this part was contemplated. Much material for incorporation in a revised edition for future publication was prepared during the year, but lack of funds necessary for the employment of special assistants prevented the prosecution of this work as fully as was desired.

The bureau has been interested in and has conducted archeological explorations in the Pueblo region of New Mexico and Arizona for many years. Since the establishment of the School of American Archæology in 1907, following the revival of interest in American archeology, by the Archæological Institute of America, that body likewise commenced systematic work in the archeology of that great region. In order to avoid duplication of effort, arrangements were made between the bureau and the school for conducting archeological investigations in cooperation, the expense of the field work to be borne equally, a moiety of the collections of the artifacts and all the skeletal remains to become the property of the National Museum, and the bureau to have the privilege of the publication of all scientific results.

Active work under this joint arrangement was commenced in the Rito de los Frijoles, northwest of Santa Fé, New Mexico, in July, 1910, work having already been initiated there during the previous summer by the school independently, under the directorship of Dr. Edgar L. Hewett. In August, 1910, Mr. Hodge visited New Mexico for the purpose of participating in the work on the part of the bureau, and remained in the field for a month.

The great prehistoric site in the Rito de los Frijoles is characterized by an immense circular many-celled pueblo ruin, most of the stone walls of which are still standing to a height of several feet, and a series of cavate dwellings hewn in the soft tufa throughout several hundred yards of the northern wall of the canyon. Accompanying the great community ruin and also the cavate dwellings are underground kivas, or ceremonial chambers. In front of the cavate lodges were originally structures of masonry built against the cliff and forming front rooms, but practically the only remains of these are the foundation walls and the rafter holes in the cliff face. The débris covering these structures has been largely cleared away and the foundations exposed, and the walls of about two-thirds of the great pueblo structure in the valley have been bared by excavation. At the western extremity of the canyon, far up in the northern wall, is a natural cavern, known as Ceremonial Cave, in which are a large kiva, remarkably well preserved, and other interesting remains of aboriginal occupancy. This great archeological site in the Rito de los Frijoles is important to the elucidation of the problem of the early distribution of the Pueblos of the Rio Grande Valley, and there is reason to believe that when the researches are completed much light will be shed thereon. There is a paucity of artifacts in the habitations uncovered, aside from stone implements, of which large numbers have been found.

At the close of the work in the Rito de los Frijoles the joint expedition proceeded to the valley of the Jemez River, near the Hot Springs, where a week was spent in excavating the cemetery of the old Jemez village of Giusiwa. About 30 burials were disinterred here, and a few accompaniments of pottery vessels and other artifacts were recovered; but in the main the deposits had been completely destroyed by aboriginal disturbance, caused in part by covering the burials with heavy stones and partly by displacing the skeletons pre-

viously buried when subsequent interments were made. Giusiwa was inhabited in prehistoric times and also well within the historical period, as is attested by its massive, roofless church, built about the beginning of the seventeenth century. Nevertheless, no indication of Spanish influence was found in the ancient cemetery, and it is assumed that burial therein ceased with the coming of the missionaries and the establishment of the campo santo adjacent to the church. All collections gathered at Giusiwa have been deposited in the National Museum.

Other immense ruins on the summits of the mesas bounding the valley on the west were examined with the view of their future excavation. The exact position of the Jemez tribe among the Pueblo peoples is a problem, and both archeological and ethnological studies thereof are essential to its determination.

On completing this reconnoissance excavation was conducted in a cemetery at the great stone pueblo of Puye, on a mesa 8 miles west of the Tewa village of Santa Clara. About 50 burials were exhumed and sent to the National Museum, but artifacts were not found in abundance here, and as a rule they are not excellent in quality. In the joint work in the Rito de los Frijoles the expedition was fortunate in having the cooperation of Prof. Junius Henderson and Prof. W. W. Robbins, of the University of Colorado at Boulder, who, respectively, while the excavations were in progress, conducted studies in the ethno-zoology and the ethno-botany of the Tewa Indians, and also on the influence of climate and geology on the life of the early inhabitants of the Rito de los Frijoles. At the same time Mr. J. P. Harrington continued his researches in Tewa geographic nomenclature and cooperated with Professors Henderson and Robbins in supplying the native terms for plants and animals used by these Indians as food and medicine in ceremonies and for other purposes. The expedition was also fortunate in having the services of Mr. Sylvanus G. Morley in connection with the excavations in the Rito, of Mr. K. M. Chapman in the study of the decoration of the pottery and of the pictographs of the entire upper Rio Grande region, of Mr. Jesse L. Nusbaum in the photographic work, and of Mr. J. P. Adams in the surveying. Valued aid was also rendered by Messrs. Neil M. Judd, Donald Beauregard, and Nathan Goldsmith.

The scientific results of the joint research are rapidly nearing completion and will be submitted to the bureau for publication at an early date.

Throughout almost the entire year Mr. James Mooney, ethnologist, was occupied in the office in compiling the material for his study of Indian population covering the whole territory north of Mexico from the first white occupancy to the present time. By request of the Nebraska State Historical Society he was detailed in January, 1911, to attend the joint session of that body and the Mississippi Valley Historical Association, at Lincoln, Nebraska, where he delivered three principal addresses bearing particularly on the method and results of the researches of the bureau with the view of their application in local historical and ethnological investigations.

On June 4 Mr. Mooney started for the reservation of the East Cherokee in North Carolina to continue former studies of the sacred formulas and general ethnology of that tribe, and was engaged in this work at the close of the month.

At the beginning of the fiscal year Dr. J. Walter Fewkes, ethnologist, was in northern Arizona examining the great cave pueblos and other ruins within the Navaho National Monument. He found that since his visit in 1909 considerable excavation had been done by others in the rooms of Betatakin, and that the walls of Kitsiel, the other large cliff ruin, were greatly in need of repair. Guided by resident Navaho, he visited several hitherto undescribed cliff dwellings and gathered a fairly good collection of objects illustrating prehistoric culture of this part of northern Arizona, which have been deposited in the

National Museum. In order to faciliate the archeological work and to make the region accessible to students and visitors it was necessary to break a wagon road from Marsh Pass through the middle of the Navaho National Monument to the neighborhood of Betatakin, and by this means the valley was traversed with wagons for the first time.

On the return journey to Flagstaff, Dr. Fewkes visited the ruins in Nitsi, or West Canyon, and examined Inscription House, a prehistoric cliff dwelling of considerable size, hitherto undescribed, the walls of which are built of loaf-shaped adobes strengthened with sticks. On account of the size and great interest of these ruins, it is recommended that the area covered thereby be included in the Navaho National Monument and the ruins permanently preserved, and that either Betatakin or Kitsiel be excavated, repaired, and made a "type ruin" of this culture area. Along the road to Flagstaff from West Canyon, Dr. Fewkes observed several ruins and learned of many others ascribed to the ancient Hopi. He visited the Hopi pueblo of Moenkopi, near Tuba, and obtained considerable new ethnological material from an old priest of that village regarding legends of the clans that formerly lived in northern Arizona. He learned also of a cliff, or rock, covered with pictographs of Hopi origin, at Willow Spring, not far from Tuba, the figures of which shed light on Hopi clan migration legends.

Returning to Flagstaff, Dr. Fewkes reoutfitted in order to conduct investigations of the ruins near Black Falls of the Little Colorado River, especially the one called Wukoki, reputed to have been the last habitation of the Snake clans of the Hopi in their southern migration before they finally settled near the East Mesa. A little more than a month was spent at these ruins, during which time extensive excavations were made in numerous subterranean rooms, or pit dwellings, a new type of habitations found at the bases of many of the large ruined pueblos on the Little Colorado. Incidentally several other pueblo ruins, hitherto unknown, with accompanying reservoirs and shrines, were observed. The excavations at Wukoki yielded about 1,800 specimens, consisting of painted pottery, beautiful shell ornaments, stone implements, basketry, wooden objects, cane "cloud blowers," prayer sticks, a prayer-stick box, an idol, and other objects. The results of the excavations at Wukoki will be incorporated in a forthcoming bulletin on Antiquities of the Little Colorado Basin.

On the completion of his work at the Black Falls ruins, Dr. Fewkes returned to Washington in September and devoted the next three months to the preparation of a monograph on Casa Grande, Arizona.

At the close of January, 1911, Dr. Fewkes again took the field, visiting Cuba for the purpose of gathering information on the prehistoric inhabitants of that island and their reputed contemporaneity with fossil sloths, sharks, and crocodiles. A fortnight was devoted to the study of collections of prehistoric objects in Habana, especially the material in the University Museum from caves in Puerto Principe Province, described by Drs. Montoné and Carlos de la Torre. With this preparation he proceeded to the Isle of Pines and commenced work near Nueva Gerona. In this island there are several caves from which human bones have been reported locally, but the Cueva de los Indios, situated in the hills about a mile from the city named, promised the greatest reward. A week's excavation in this cave yielded four fragments of Indian skulls, not beyond repair; one undeformed, well-preserved, human cranium; and many fragments of pelves, humeri, and femora. The excavations in the middle of the cave indicated that the soil there had previously been dug over: these yielded little of value, the best-preserved remains occurring near the entrance, on each side. The skulls were arranged in a row within a pocket sheltered by

an overhanging side of the cave, and were buried about 2 feet in the guano and soil; beneath these crania were human long-bones, crossed. Several fragments of a single skull or of several skulls were embedded in a hard stalagmitic formation over the deposit of long-bones. No Indian implements or pottery accompanied the bones, and no fossils were found in association with them. So far as recorded this is the first instance of the finding of skeletal remains of cave man in the Isle of Pines. Their general appearance and mode of burial were the same as in the case of those discovered by Drs. Montoné and Carlos de la Torre.

Dr. Fewkes also examined, in the Isle of Pines, about 30 structures known as cacimbas, their Indian name. These are vase-shaped, subterranean receptacles, averaging 6 feet in depth and 4 feet in maximum diameter, generally constricted to about 2 feet at the neck, and with the opening level with the surface of the ground. Although these cacimbas are generally ascribed to the Indians, they are thought by some to be of Spanish origin, and are connected by others with buccaneers, pirates, and slavers. They are built of masonry or cut in the solid rock; the sides are often plastered and the bottoms commonly covered with a layer of tar. On the ground near the openings there is generally a level, circular space, with raised periphery. The whole appearance supports the theory that these structures were used in the manufacture of turpentine or tar, the circular area being the oven and the cacimba the receptacle for the product.

Dr. Fewkes found that the Pineros, or natives of the island, employ many aboriginal terms for animals, plants, and places, and in some instances two Indian words are used for the same object. An acknowledged descendant of a Cuban Indian explained this linguistic duality by saying that the Indians of the eastern end of the Isle of Pines spoke a dialect different from those of the western end, and that when those from Camaguey, who were Tainan and of eastern Cuban origin, came to the Isle of Pines at the instance of the Spanish authorities they brought with them a nomenclature different from that then in use on that island.

Several old Spanish structures of masonry, the dates of which are unknown, were also examined in the neighborhood of Santa Fé, Isle of Pines. The roof of a cave at Punta de Este, the southeastern angle of the island, bears aboriginal pictographs of the sun and other objects, suggesting that it is comparable with the cave in Haiti, in which, in Indian legend, the sun and the moon originated and from which the races of man emerged.

Dr. Fewkes has now collected sufficient material in Cuba to indicate that its western end, including the Isle of Pines, was once inhabited by a cave-dwelling people, low in culture and without agriculture. His observations support the belief that this people were in that condition when Columbus visited the Isle of Pines and that they were survivors of the Guanahatibibes, a cave-dwelling population formerly occupying the whole of Cuba and represented in Porto Rico and other islands of the West Indies.

Dr. Fewkes also visited several of the coral keys southwest of Isle of Pines, but, finding no aboriginal traces, he crossed the channel to Cayman Grande, about 250 miles from Nueva Gerona. The Cayman group consists of coral islands built on a submarine continuation of the mountains of Santiago Province, Cuba. A cave with Indian bones and pottery, probably of Carib origin, was found near Boddentown on the eastern end of the island, and a few stone implements were obtained from natives, but as these specimens may have been brought from adjacent shores they afford little evidence of a former aboriginal population of Cayman Grande. The elevation of the Cayman Islands, computed from the annual accretion, would indicate that Cayman

Grande was a shallow reef when Columbus visited Cuba, and could not have been inhabited at that time. The discoverer passed very near it on his second voyage, when his course lay from the Isle of Pines to Jamaica, but he reported neither name nor people.

Dr. Fewkes returned to Washington in April and spent the remainder of the year in completing his report on Casa Grande.

Dr. John R. Swanton, ethnologist, devoted the first quarter of the year chiefly to collecting material from libraries and archives, as the basis of his study of the Creek Indians. From the latter part of September until early in December he was engaged in field research among the Creek, Natchez, Tonkawa, and Alibamu Indians in Oklahoma and Texas, and also remained a short time with the remnant of the Tunica and Chitimacha in Louisiana, and made a few side trips in search of tribes which have been lost to sight within recent years. On his return to Washington, Dr. Swanton transcribed the linguistic and ethnologic material collected during his field excursion, read the proofs of Bulletins 44, 46, and 47, added to the literary material regarding the Creek Indians, collected additional data for a tribal map of the Indians of the United States, and initiated a study of the Natchez language with the special object of comparing it with the other dialects of the Muskhogean family. Dr. Swanton also spent some time in studying the Chitimacha and Tunica languages.

From July, 1910, until the middle of April, 1911, Mrs. M. C. Stevenson, ethnologist, was engaged in the completion of a paper on Dress and Adornment of the Pueblo Indians, in the elaboration of her report on Zuñi Plants and Their Uses, and in transcribing her field notes pertaining to Zuñi religious concepts and the mythology and ethnology of the Taos Indians.

Mrs. Stevenson left Washington on April 12 and proceeded directly to the country of the Tewa Indians, in the valley of the Rio Grande in New Mexico, for the purpose of continuing her investigation of those people. Until the close of the fiscal year her energies were devoted to the pueblo of San Ildefonso and incidentally to Santa Clara, information particularly in regard to the Tewa calendar system, ceremonies, and material culture being gained. Mrs. Stevenson finds that the worship of the San Ildefonso Indians includes the same celestial bodies as are held sacred by the Zuñi and other Pueblos. From the foundation laid during her previous researches among the Tewa, Mrs. Stevenson reports that she has experienced little difficulty in obtaining an insight into the esoteric life of these people, and is daily adding to her store of knowledge respecting their religion and sociology. A complete record of obstetrical practices of the Tewa has been made, and it is found that they are as elaborate as related practices of the Taos people. The San Ildefonso inhabitants do not seem to have changed their early customs regarding land tenure, and they adhere tenaciously to their marriage customs and birth rites, notwithstanding the long period during which missionaries have been among them. It is expected that, of her many lines of study among the Tewa tribes, the subject of their material culture will produce the first results for publication.

After completing some special articles on ethnologic topics for the closing pages of Part 2 of the Handbook of American Indians, Mr. J. N. B. Hewitt, ethnologist, pursued the study of the history of the tribes formerly dwelling in the Susquehanna and upper Ohio valleys. Progress in these researches was interrupted by the necessity of assigning him to the editorial revision and annotation of a collection of 120 legends, traditions, and myths of the Seneca Indians, recorded in 1884 and 1885 by the late Jeremiah Curtin. At the close of the year this work was far advanced, only about 150 pages of a total of 1,400 pages remaining to be treated. It is designed to publish this material,

with Mr. Hewitt's introduction, notes, and explanatory matter, in a forthcoming annual report. As opportunity afforded, Mr. Hewitt also resumed the preparation of his sketch of the grammar of the Iroquois for incorporation in the Handbook of American Indian Languages.

As in previous years, Mr. Hewitt prepared and collected data for replies to numerous correspondents requesting special information, particularly in regard to the Iroquois and Algonquian tribes. Mr. Hewitt also had charge of the important collection of 1,716 manuscripts of the bureau, cataloguing new accessions and keeping a record of those withdrawn in the progress of the bureau's researches. During the year, 378 manuscripts were thus made use of by the members of the bureau and its collaborators. Exclusive of the numerous manuscripts prepared by the staff of the bureau and by those in collaboration with it, referred to in this report, 12 items were added during the year. These pertain to the Pawnee, Chippewa, Zuñi, and Tewa tribes, and relate to music, sociology, economics, and linguistics.

The beginning of the fiscal year found Dr. Truman Michelson, ethnologist, conducting ethnological and linguistic investigations among the Piegan Indians of Montana, whence he proceeded to the Northern Cheyenne and Northern Arapaho, thence to the Menominee of Wisconsin, and finally to the Micmac of Restigouche, Canada—all Algonquian tribes, the need of a more definite linguistic classification of which has long been felt. Dr. Michelson returned to Washington at the close of November and immediately commenced the elaboration of his field notes, one of the results of which is a manuscript bearing the title "A Linguistic Classification of the Algonquian Tribes," submitted for publication in the twenty-eighth annual report. Also in connection with his Algonquian work Dr. Michelson devoted attention to the further revision of the material pertaining to the Fox grammar, by the late Dr. William Jones, the outline of which is incorporated in the Handbook of American Indian Languages. During the winter Dr. Michelson took advantage of the presence in Washington of a deputation of Chippewa Indians from White Earth, Minnesota, by enlisting their services in gaining an insight into the social organization of that tribe and also in adding to the bureau's accumulation of Chippewa linguistic data. Toward the close of June, 1911, Dr. Michelson proceeded to the Sauk and Fox Reservation in Iowa for the purpose of continuing his study of that Algonquian group.

The months of July and August and half of September, 1910, were spent by Dr. Paul Radin, ethnologist, among the Winnebago Indians of Nebraska and Wisconsin, his efforts being devoted to a continuation of his studies of the culture of those people, with special reference to their ceremonial and social organization and their general social customs. Part of the time was devoted to a study of the Winnebago material culture, but little progress was made in this direction, as few objects of aboriginal origin are now possessed by these people, consequently the study must be completed by examination of their objects preserved in museums and private collections. A beginning in this direction was made by Dr. Radin during the latter half of September and in October at the American Museum of Natural History, New York City. During the remainder of the fiscal year Dr. Radin was engaged in arranging the ethnological material gathered by him during the several years he has devoted to the Winnebago tribe, and in the preparation of a monograph on the Medicine Ceremony of the Winnebago and a memoir on the ethnology of the Winnebago tribe in general. In June, 1911, he again took the field in Wisconsin for the purpose of obtaining the data necessary to complete the tribal monograph. Both these manuscripts, it is expected, will be finished by the close of the present calendar year.

By arrangement with the Commissioner of Indian Affairs the bureau was fortunate in enlisting the services of Mr. Francis La Flesche, who has been frequently mentioned in the annual reports of the bureau in connection with his studies, jointly with Miss Alice C. Fletcher, of the ethnology of the Omaha tribe of the Siouan family. Having been assigned the task of making a comparative study of the Osage tribe of the same family, Mr. La Flesche proceeded to their reservation in Oklahoma in September. The older Osage men, like the older Indians generally, are very conservative, and time and tact were necessary to obtain such standing in the tribe as would enable him to establish friendly relations with those to whom it was necessary to look for trustworthy information. Although the Osage language is similar to that of the Omaha, Mr. La Flesche's native tongue, there are many words and phrases that sound alike but are used in a different sense by the two tribes. Having practically mastered the language, Mr. La Flesche was prepared to devote several months to what is known as the No^{n}'ho^{n}zhi^{n}ga Ie'ta, the general term applied to a complex series of ceremonies which partake of the nature of degrees, but are not, strictly speaking, successive steps, although each one is linked to the other in a general sequence. While at the present stage of the investigation it would be premature to make a definite statement as to the full meaning and interrelation of these Osage ceremonies, there appear to be seven divisions of the No^{n}'ho^{n}zhi^{n}ga Ie'ta, the names, functions, and sequence of which have been learned, but whether the sequence thus far noted is always maintained remains to be determined. From Saucy-Calf, one of the three surviving Osage regarded as past masters in these ceremonies, phonographic records of the first of the ceremonies, the Waxo'be-awatho^{n}, have been made in its entirety, consisting of 80 songs with words and music, and 7 prayers. All these have been transcribed and in part translated into English, comprising a manuscript exceeding 300 pages. In order to discuss with the Osage the meaning of these rituals, Mr. La Flesche found it necessary to commit them to memory, as reading from the manuscript disconcerted the old seer. At Saucy-Calf's invitation Mr. La Flesche witnessed in the autumn, at Grayhorse, a performance of the ceremony of the Waxo'be-awatho^{n}, the recitation of the rituals of which requires one day, part of a night, and more than half of the following day. It is Mr. La Flesche's purpose to record, if possible, the rituals of the remaining six divisions of the No^{n}'ho^{n}zhi^{n}ga Ie'ta. He has already obtained a pharaphrase of the seventh ceremony (the Nik'ino^{n}k'o^{n}), and hopes soon to procure a phonographic record of all the rituals pertaining thereto.

In connection with his ethnological work Mr. La Flesche has been so fortunate as to obtain for the National Museum four of the waxo'be, or sacred packs, each of which formed a part of the paraphernalia of the No^{n}'ho^{n}zhi^{n}ga Ie'ta, as well as a waxo'be-to^{n}'ga, the great waxo'be which contains the instruments for tattooing. Only those Osage are tattooed who have performed certain acts prescribed in the rites of the No^{n}'ho^{n}zhi^{n}ga Ie'ta. The rites of the tattooing ceremony are yet to be recorded and elucidated. While the waxo'be is the most sacred of the articles that form the paraphernalia of the No^{n}'ho^{n}zhi^{n}ga Ie'ta rites, it is not complete in itself; other things are indispensable to their performance, and it is hoped that these may be procured at some future time.

While not recorded as one of the ceremonial divisions of the No^{n}'ho^{n}zhi^{n}ga Ie'ta, there is a ceremony so closely connected with it that it might well be regarded as a part thereof—this is the Washa'beathi^{n} watsi, or the dance of the standards. The introductory part of this ceremony is called Akixage, or weeping over one another in mutual sympathy by the members of the two great divisions of the tribe. There is no regular time for the performance of the Washa'beathi^{n}n ceremony. It is given only when a member of the tribe loses

by death some specially loved and favored relative and seeks a ceremonial expression of sympathy from the entire tribe. It is the intention to procure the songs and rituals of this ceremony, and specimens of the standards employed in its performance.

Altogether Mr. La Flesche has made excellent progress in his study of the Osage people, and the results are already shedding light on the organization and the origin and function of the ceremonies of this important tribe.

The special researches of the bureau in the field of linguistics were conducted by Dr. Franz Boas, honorary philologist, one of the immediate and tangible results of which was the publication of Part 1 of the Handbook of American Indian Languages. It seems desirable to restate at the present time the development of the plan and the object of this work.

Through the efforts of the late Maj. Powell and his collaborators a great number of vocabularies and a few grammars of American Indian languages had been accumulated, but no attempt had been made to give a succinct description of the morphology of all the languages of the continent. In order to do this, a series of publications was necessary. The subject matter had to be represented by a number of grammatical sketches, such as are now being assembled in the Handbook of American Indian Languages. To substantiate the inductions contained in this grammar, collections of texts are indispensable to the student, and finally a series of extended vocabularies are required. The plan, as developed between 1890 and 1900, contemplated the assembling in the bulletin series of the bureau of a series of texts which were to form the basis of the handbook. Of this series, Dr. Boas's Chinook, Kathlamet, and Tsimshian Texts, and Swanton's Haida and Tlingit Texts, subsequently published, form a part, but at the time Swanton's Texts appeared it was believed by Secretary Langley that material of this kind was too technical in character to warrant publication in a governmental series. It was, therefore, decided to discontinue the text series in the bulletins of the bureau and to divert them to the Publications of the American Ethnological Society and the Columbia University Contributions to Anthropology. Other series were commenced by the University of California and the University of Pennsylvania. The method of publication pursued at the present time, though different from that first planned, is acceptable, since all the material is accessible to students, and the bureau is saved the expense of publication.

Dr. Boas has been enabled to base all the sketches in the first volume of his handbook on accompanying text series, as follows:

(1) Athapascan. Text published by the University of California.

(2) Tlingit. Text published by the Bureau of American Ethnology, but too late to be used systematically.

(3) Haida. Texts published by the Bureau of American Ethnology.

(4) Tsimshian. Texts published by the Bureau of American Ethnology and the American Ethnological Society.

(5) Kwakiutl. Texts published by the Jesup Expedition and in the Columbia University series.

(6) Chinook. Texts published by the Bureau of American Ethnology.

(7) Maidu. Texts published by the American Ethnological Society, but too late to be used.

(8) Algonquian. Texts published by the American Ethnological Society.

(9) Sioux. Texts in Contributions to North American Ethnology.

(10) Eskimo. Texts in "Meddelelser om Grønland," but not used systematically.

Although Dr. Boas has urged the desirability of undertaking the publication of the series of vocabularies, no definite steps have yet been taken toward the

realization of this plan, owing largely to lack of funds for the employment of assistants in preparing the materials. It is hoped, however, that such a series of vocabularies, based on the published grammars and on the series of texts above referred to, may be prepared for publication in the near future. Much of the preliminary work has been done. There are, for example, extended manuscript dictionaries of the Haida, Tsimshian, Kwakiutl, Chinook, and Sioux, but none of them is yet ready for the printer.

The work on Part 2 of the Handbook of American Indian Languages is progressing satisfactorily. The sketch of the Takelma is in page form (pp. 1–296), but Dr. Boas has undertaken the correlation of this sketch with the Takelma Texts which meanwhile have been published by the University of Pennsylvania, and a considerable amount of work remains to be done to finish this revision. The Coos grammar is in galleys. The Coos Texts are at the present writing being printed by the American Ethnological Society, and here also references are being inserted. Dr. Leo J. Frachtenberg has continued his collection of material for the handbook with commendable energy and intelligence. The field work has been financially aided by Columbia University, partly through a gift made by Mrs. Henry Villard and partly through funds provided by Mr. Homer E. Sargent. It has also been possible to utilize for the work on the Alsea the collections made at a former time by Prof. Livingston Farrand on an expedition supported by the late Mr. Henry Villard. On his last expedition Dr. Frachtenberg was able to determine that the Siuslaw is an independent stock, although morphologically affiliated with the Alsea, Coos, and Siuslaw group. He also collected extensive material on the Alsea and Molala.

The most important result, which is appearing more and more clearly from the investigations carried out under the direction of Dr. Boas, lies in the fact that it will be possible to classify American languages on a basis wider than that of linguistic stocks. In 1893 Dr. Boas called attention to the fact that a number of languages in northern British Columbia seem to have certain morphological traits in common, by which they are sharply differentiated from all the neighboring languages, although the evidence for a common origin of the stocks is unsatisfactory. Dr. Boas and his assistants have followed this observation, and it can now be shown that throughout the continent languages may be classed in wider morphological groups. It is interesting to note that phonetic groups may be distinguished in a similar manner, but these do not coincide with the morphological groups. These observations are in accord with the results of modern inquiries in Africa and Asia, where the influence of Hamitic phonetics on languages of the Sudan and the influence of Sumerian on early Babylonian have been traced in a similar manner. Analogous conditions seem to prevail also in South Africa, where the phonetics of the Bushman languages have influenced the neighboring Bantu languages. In this way a number of entirely new and fundamental problems in linguistic ethnography have been formulated, the solution of which is of the greatest importance for a clear understanding of the early history of the American Continent.

The Handbook of American Indian Languages as planned at the present time deals exclusively with an analytical study of the morphology of each linguistic family, without any attempt at a detailed discussion of phonetic processes, their influence upon the development of the language, and the relation of dialects. Dr. Boas recommends that the present Handbook of American Indian Languages be followed by a series of handbooks each devoted to a single linguistic stock, in which the development of each language, so far as it can be traced by comparative studies, should be treated.

The study of aboriginal American music was conducted among the Chippewa Indians by Miss Frances Densmore, who extended her field of work previously

begun among that people and elaborated the system of analyzing their songs. After spending several weeks on the Lac du Flambeau Reservation in Wisconsin she accompanied the Chippewa from that reservation to the Menominee Reservation in the same State, where the Lac du Flambeau Chippewa ceremonially presented two drums to the Menominee. This ceremony was closely observed, photographs being taken and the speeches of presentation translated, and the songs of the ceremony were recorded by Miss Densmore on a phonograph after the return of the drum party to Lac du Flambeau. Many of the songs are of Sioux origin, as the ceremony was adopted from that people; consequently the songs were analyzed separately from those of Chippewa origin. Numerous old war songs were recorded at Lac du Flambeau, also songs said to have been composed during dreams, and others used as accompaniments to games and dances. The analytical tables published during the year in Bulletin 45, Chippewa Music, have been combined by Miss Densmore with those of songs collected during the year 1910–11, making a total of 340 Chippewa songs under analysis. These are analyzed in 12 tables, showing the structure, tone material, melodic progression, and rhythm of the songs, the rhythm of the drum, the relation between the metric unit of the voice and drum, and other points bearing on the development and form of primitive musical expression. This material is now almost ready for publication. The Sioux songs of the drum presentation ceremony, similarly analyzed, constitute the beginning of an analytical study of the Sioux music, which will be continued and extended during the fiscal year 1911–12.

Miss Alice C. Fletcher and Mr. La Flesche conducted the final proof revision of their monograph on the Omaha tribe, to accompany the twenty-seventh annual report, which was in press at the close of the fiscal year. This memoir will comprise 658 printed pages and will form the most complete monograph of a single tribe that has yet appeared.

Mr. J. P. Dunn, whose studies of the Algonquian tribes of the Middle West have been mentioned in previous reports, deemed it advisable, before continuing his investigation of the languages of the tribes comprising the former Illinois confederacy, to await the completion of the copying of the anonymous manuscript Miami-French Dictionary, attributed to Père Joseph Ignatius Le Boulanger, in the John Carter Brown Library at Providence, Rhode Island. Through the courteous permission of Mr. George Parker Winship, librarian, the bureau has been enabled to commence the copying of this manuscript, the difficult task being assigned to Miss Margaret Bingham Stillwell, under Mr. Winship's immediate direction. At the close of the fiscal year 20½ pages of the original (comprising 95 pages of transcript), of the total of 155 pages of the dictionary proper, were finished and submitted to the bureau. It is hoped that on the completion of the copying the bureau will have a basis for the study of the Miami and related languages that would not be possible among the greatly modified remnant of the Indians still speaking them.

Prof. Howard M. Ballou, of Honolulu, has continued the preparation of the List of Works Relating to Hawaii, undertaken in collaboration with the late Dr. Cyrus Thomas, and during the year submitted the titles of many early publications, including those of obscure books printed in the Hawaiian language.

Mr. John P. Harrington, of the School of American Archæology, proceeded in March to the Colorado Valley in Arizona and California for the purpose of continuing his studies, commenced a few years before, among the Mohave Indians, and incidentally to make collections for the United States National Museum. Mr. Harrington was still among these Indians at the close of July, and the results of his studies, which cover every phase of the life of this interesting people, are to be placed at the disposal of the bureau for publication.

PUBLICATIONS.

The general editorial work of the bureau continued in immediate charge of Mr. J. G. Gurley, editor. The editing of Part 2 of Bulletin 30, Handbook of American Indians, was conducted by Mr. Hodge, while the editorial supervision of Bulletin 40, Handbook of American Indian Languages, was in charge of Dr. Boas. At the close of the fiscal year the twenty-seventh annual report was nearly ready for the bindery; more than one-third of Bulletin 40, Part 2, was in type (mostly in pages); and Bulletin 47, a Dictionary of the Biloxi and Ofo Languages, by Dorsey and Swanton, was in page form. Some progress had been made in the revision of the galley proof of Bulletin 46, Byington's Choctaw Dictionary, a work requiring the expenditure of considerable time and labor. Much of Mr. Gurley's time during the year was given to the work of editing and proof reading the twenty-seventh annual report and its accompanying paper, the monograph on the Omaha tribe, by Miss Fletcher and Mr. La Flesche, above referred to. The following publications were issued during the year:

Bulletin 30. Handbook of American Indians North of Mexico (F. W. Hodge, editor), Part 2.

Bulletin 37. Antiquities of Central and Southeastern Missouri (Gerard Fowke).

Bulletin 40. Handbook of American Indian Languages (Franz Boas, editor), Part 1.

Bulletin 43. Indian Tribes of the Lower Mississippi Valley and Adjacent Coast of the Gulf of Mexico (J. R. Swanton).

Bulletin 44. Indian Languages of Mexico and Central America and their Geographical Distribution (Cyrus Thomas and J. R. Swanton).

Bulletin 45. Chippewa Music (Frances Densmore).

Bulletin 50. Preliminary Report on a Visit to the Navaho National Monument, Arizona (J. Walter Fewkes).

Bulletin 51. Antiquities of the Mesa Verde National Park: Cliff Palace (J. Walter Fewkes).

The preparation of the illustrations for the publications of the bureau and the making of photographic portraits of the members of visiting deputations of Indians were in charge of Mr. De Lancey Gill, illustrator. Of the 246 negatives made, 120 comprise portraits of visiting Indians. In addition 372 photographic films, exposed by members of the bureau in connection with their field work, were developed and printed. Photographic prints for publication and exchange were made to the number of 1,469, and 22 drawings for use as illustrations were prepared. Mr. Gill was assisted, as in the past, by Mr. Henry Walther.

LIBRARY.

The library of the bureau has continued in the immediate charge of Miss Ella Leary, librarian. During the year that part of the southeastern gallery of the lower main hall of the Smithsonian Building which was vacated by the National Museum, was assigned to the use of the bureau library, and three additional stacks were built, providing shelf room for about 2,500 volumes. Nearly that number of books which had been stored, and consequently made inaccessible, were placed on the new shelves. The policy carried out from year to year of increasing the library by exchange with other institutions has been continued, and special effort made to complete the collection of serial publications. Especially to be noted is the completion of the sets of publications of the Maine Historical Society and the Archives of Pennsylvania, both rich in

material pertaining to the Indians. As in the past, it has been necessary for the bureau to make use of the Library of Congress from time to time, about 200 volumes having been borrowed during the year. Twelve hundred books and approximately 650 pamphlets were received, in addition to the current numbers of more than 600 periodicals. Of the books and pamphlets received, 148 were acquired by purchase, the remainder by gift or exchange. Six hundred and eighty-nine volumes were bound by the Government Printing Office, payment therefor being made from the allotment "for printing and binding * * * annual reports and bulletins of the Bureau of American Ethnology, and for miscellaneous printing and binding," authorized by the sundry civil act. This provision has enabled the bureau, during the last two years, to bind many volumes almost in daily use which were threatened with destruction. The catalogue of the bureau now records 17,250 volumes; there are also about 12,200 pamphlets, and several thousand unbound periodicals. The library is constantly referred to by students not connected with the bureau, as well as by various officials of the Government service.

PROPERTY.

As noted in previous reports the principal property of the bureau consists of its library, manuscripts, and photographic negatives. In addition it possesses a number of cameras, phonographic machines, and ordinary apparatus and equipment for field work, stationery and office supplies, a moderate amount of office furniture, typewriters, etc., and the undistributed stock of its publications. The sum of $304.62 was expended for office furniture (including bookstacks at a cost of $205) during the fiscal year.

RECOMMENDATIONS.

For the purpose of extending the systematic researches of the bureau and of affording additional facilities for its administration, the following recommendations are made:

A question having arisen in the Committee on Appropriations of the House of Representatives as to the purpose for which an increase of $2,000 in the bureau's appropriation in 1909 was intended, the work of excavating and repairing antiquities existing in national parks and monuments has been curtailed. The importance of elucidating the archeological problems connected with these ancient remains and of repairing the more important of them for visitors and for future students is so apparent that the need of continuing this work is generally recognized, consequently an estimate of $4,000 "for the exploration and preservation of antiquities" has been submitted for the next fiscal year.

Ethnological research in Alaska is urgently needed by reason of the great changes taking place among the Indians and the Eskimo since the influx of white people a few years ago. Unless this investigation is undertaken at once the aboriginal inhabitants will have become so modified by contact with whites that knowledge of much of their primitive life will be lost. It is recommended that the sum of $4,500 be appropriated for this work.

The more speedy extension of ethnological researches among the remnants of the Algonquian tribes formerly occupying the Middle West is desired. In a number of cases these tribes are represented by only a few survivors who retain any knowledge of the traits, language, and customs of their people, hence it will be impossible to gather much of this information unless the work is extended more rapidly, as the funds now at the bureau's disposal for this purpose are inadequate. The additional sum of $1,000 is recommended for this purpose.

As previously stated, the demand for the Handbook of American Indians has been so great that many schools and libraries have necessarily been denied. The need of a revised edition is urgent, but the revision can not be satisfactorily undertaken and the latest information incorporated without the employment of special ethnologic assistants—those who have devoted special study to particular tribes—and editorial and clerical aid. It is recommended that the sum of $3,800 be appropriated for this purpose.

The bureau is constantly in receipt of requests from schools, historical societies, compilers of textbooks, etc., for photographic prints of Indian subjects, since it is generally known that the bureau possesses many thousands of negatives accumulated in the course of its investigations. As no funds are now available for this purpose, it is recommended that a reasonable sum, say $1,000, be appropriated for the purpose of furnishing prints for educational purposes. In most cases applicants would doubtless be willing to pay the cost, but at present the bureau has no authority for selling photographs.

The manuscripts accumulated by the bureau form a priceless collection; indeed many of them, if lost, could not be replaced, since they represent the results of studies of Indians who have become extinct or have lost their tribal identity. It is therefore urgently recommended that the sum of $1,350 be appropriated for fireproofing a room and for providing metal cases for the permanent preservation of the manuscripts.

Respectfully submitted.

F. W. Hodge, *Ethnologist in Charge.*

Dr. Charles D. Walcott,
Secretary of the Smithsonian Institution.

Appendix III.

REPORT ON THE INTERNATIONAL EXCHANGES.

Sir: I have the honor to submit the following report on the operations of the International Exchange Service during the fiscal year ending June 30, 1911, which was prepared under the direction of Mr. C. W. Shoemaker, chief clerk, who was in charge of the service from January, 1910, until June 1, 1911.

The congressional appropriation for the support of the service during 1911 was $32,200 (the same amount granted for the past three years), and the sum collected on account of repayments was $4,754.99, making the total available resources for carrying on the system of international exchanges $36,954.99.

The total number of packages handled during the year was 228,698—an increase over the number for the preceding year of 7,073. The weight of these packages was 560,808 pounds—a gain of 76,124 pounds. For purposes of comparison the number and weight of packages of different classes are indicated in the following table:

	Packages.		Weight.	
	Sent.	Received.	Sent.	Received.
			Pounds.	*Pounds.*
United States parliamentary documents sent abroad	103,769	.....	116,219	.....
Publications received in return for parliamentary documents	.....	1,752	.....	18,467
United States departmental documents sent abroad	55,104	.....	216,686	.....
Publications received in return for departmental documents	.....	8,715	.....	18,837
Publications from miscellaneous sources sent abroad	28,834	.....	56,165	.....
Publications received from abroad for miscellaneous distribution	.....	30,524	.....	134,434
Total	187,707	40,991	389,070	171,738
Grand total	228,698		560,808	

The disparity between the number of packages received and those sent may be accounted for, in part, by the fact that many returns for publications sent abroad are forwarded to their destinations by mail and not through the exchange service. This difference is further due to the fact that whereas packages sent are made up in most cases of separate publications, those received contain several volumes—in some instances the term "package" being applied to large boxes often containing 100 or more publications.

By referring to the above statement it will be noted that 74 per cent of the work of the office has been conducted in behalf of the United States governmental establishments.

Of the 2,380 boxes used in forwarding exchanges to foreign bureaus and agencies for distribution (an increase of 347 boxes over 1910), 385 boxes contained full sets of United States official documents for authorized depositories and 1,995 were filled with departmental and other publications for depositories of partial sets and for miscellaneous correspondents.

Several changes have been made during the year in the routine of the Exchange Office looking to the economical and efficient administration of the service. These changes are here briefly referred to.

It had been the practice for many years to keep a card record of both incoming and outgoing packages—a credit and debit account with each establishment or individual using the facilities of the Exchange Service—thus enabling the Institution to answer inquiries concerning the transmisson of any particular package without delay. As the keeping of these cards involved a great deal of labor—quite out of proportion to the benefits derived therefrom—and also as most of the information given thereon could, with the expenditure of a little more time, be obtained from other records in the office, the detailed statement of outgoing packages has been discontinued. This curtailment in the work has made it possible to dispense with the services of one of the clerks in the record room. The discontinuance of these cards has, furthermore, brought about a change in the work in the shipping room whereby the preparation of consignments for transmission abroad is facilitated.

Since the fiscal year 1897 there has been printed in the report on the exchanges, under the caption "Interchange of Publications between the United States and Other Countries," a statement showing in detail the number of packages sent to and received from each country through the International Exchange Service. In most instances, the statistics contained in these statements indicated that a much larger number of packages were sent abroad than were received in return. While it is true that a certain disparity exists, the statements were misleading, since, as already explained, a great many packages are received through other channels by correspondents in this country in return for those sent through the Exchange Service. In view of this fact, and also because the statistics contained in these statements were seldom required for the use of the Exchange Office, the keeping of the detailed record from which they were derived has been discontinued. The time saved by this and other minor changes in the receiving room has enabled the clerical force in that room to keep the work required in handling and recording the large number of packages received for transmission through the service more nearly up to date.

Mention was made in the last report that the German authorities had in contemplation the founding of an institution at Berlin to further cultural relations between Germany and the United States, and that one of its functions would be the transmission and distribution of German exchanges. This establishment, which is known as the "Amerika-Institut," was organized in the fall of 1910, and the exchange of publications was taken up by it on January 1, 1911. On the latter date the exchange agency maintained by the Smithsonian Institution in Leipzig at the publishing house of Karl W. Hiersemann was discontinued.

Prior to the discontinuance of the Leipzig agency the interchange of publications between correspondents in Luxemburg and Roumania and those in the United States was conducted through that medium. In compliance with the Institution's request, the Amerika-Institut has been good enough to assume charge of the distribution of packages in Luxemburg. The Academia Romana at Bucharest—the depository of a partial set of United States governmental documents—has been approached with a view to enlisting its services in the interchange of publications between Roumania and the United States, and it is hoped that the academy may find it convenient to have this work conducted under its auspices.

The Japanese exchange agency and the depository of a full set of United States governmental documents was transferred by the Japanese Government, during the latter part of the year, from the Department of Foreign Affairs to

the Imperial Library at Tokyo. The regular series of official documents, as well as all publications for distribution in Japan, are therefore now forwarded to that library.

An application received by the Institution from the under secretary to the Government of the United Provinces of Agra and Oudh, Allahabad, India, for copies of such United States official publications as might be of interest to it was favorably acted upon by the Library of Congress, and that Government was added to the list of those countries receiving partial sets of governmental documents. The first shipment, consisting of six boxes, was forwarded to the under secretary on October 11, 1910.

Two cases forwarded from Washington in October, 1910, containing exchanges for miscellaneous addresses in New South Wales, were destroyed in transit to that country, the steamship by which the consignment was transmitted having been burned at sea. The senders of the packages contained in these cases were communicated with, and it is gratifying to state that it was possible for most of them to supply copies of the lost publications.

The work inaugurated in 1908 of actively seeking returns from foreign countries for the exchanges sent to them by this Government has resulted during the year in the acquisition of important collections of publications for the Library of Congress and for several other establishments of the Government.

About 10,000 foreign governmental documents of a statistical character, returned by the Library of Congress as duplicates, have been stored for some time in the Smithsonian Institution. These books were arranged and listed during the year under the direction of the assistant librarian, while the Exchange Service, through which the documents were received from abroad, provided the extra clerical assistance required. Upon completion of this work most of the documents were forwarded to the New York Public Library to complete its series of foreign governmental publications.

FOREIGN DEPOSITORIES OF UNITED STATES GOVERNMENTAL DOCUMENTS.

In accordance with treaty stipulations and under the authority of the congressional resolutions of March 2, 1867, and March 2, 1901, setting apart a certain number of documents for exchange with foreign countries, there are now sent regularly to depositories abroad 55 full sets of United States official publications and 34 partial sets, the United Provinces of Agra and Oudh having been added during the year to the list of countries receiving partial sets.

The recipients of full and partial sets are as follows:

DEPOSITORIES OF FULL SETS.

Argentina: Ministerio de Relaciones Exteriores, Buenos Aires.
Argentina: Biblioteca de la Universidad Nacional de La Plata.
Australia: Library of the Commonwealth Parliament, Melbourne.
Austria: K. K. Statistische Central-Commission, Vienna.
Baden: Universitäts-Bibliothek, Freiburg.
Bavaria: Königliche Hof- und Staats-Bibliothek, Munich.
Belgium: Bibliothèque Royale, Brussels.
Brazil: Bibliotheca Nacional, Rio de Janeiro.
Canada: Parliamentary Library, Ottawa.
Cape Colony: Government Stationery Department, Cape Town.
Chile: Biblioteca del Congreso Nacional, Santiago.
China: American-Chinese Publication Exchange Department, Shanghai Bureau of Foreign Affairs, Shanghai.
Colombia: Biblioteca Nacional, Bogota.
Costa Rica: Oficina de Depósito y Canje de Publicaciones, San José.

Cuba: Secretaria de Estado (Asuntos Generales y Canje Internacional), Habana.
Denmark: Kongelige Bibliotheket, Copenhagen.
England: British Museum, London.
England: London School of Economics and Political Science, London.
France: Bibliothèque Nationale, Paris.
France: Préfecture de la Seine, Paris.
Germany: Deutsche Reichstags-Bibliothek, Berlin.
Greece: Bibliothèque Nationale, Athens.
Haiti: Secrétairerie d'État des Relations Extérieures, Port au Prince.
Hungary: Hungarian House of Delegates, Budapest.
India: Department of Education (Books), Government of India, Calcutta.
Ireland: National Library of Ireland, Dublin.
Italy: Biblioteca Nazionale Vittorio Emanuele, Rome.
Japan: Imperial Library of Japan, Tokyo.
Manitoba: Provincial Library, Winnipeg.
Mexico: Instituto Bibliográfico, Biblioteca Nacional, Mexico.
Netherlands: Library of the States General, The Hague.
New South Wales: Board for International Exchanges, Sydney.
New Zealand: General Assembly Library, Wellington.
Norway: Storthingets Bibliothek, Christiania.
Ontario: Legislative Library, Toronto.
Peru: Biblioteca Nacional, Lima.
Portugal: Bibliotheca Nacional, Lisbon.
Prussia: Königliche Bibliothek, Berlin.
Quebec: Legislative Library, Quebec.
Queensland: Parliamentary Library, Brisbane.
Russia: Imperial Public Library, St. Petersburg.
Saxony: Königliche Oeffentliche Bibliothek, Dresden.
Servia: Section Administrative du Ministère des Affaires Etrangères, Belgrade.
South Australia: Parliamentary Library, Adelaide.
Spain: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
Sweden: Kungliga Biblioteket, Stockholm.
Switzerland: Bibliothèque Fédérale, Berne.
Tasmania: Parliamentary Library, Hobart.
Transvaal: Government Library, Pretoria.
Turkey: Department of Public Instruction, Constantinople.
Uruguay: Oficina de Canje Internacional de Publicaciones, Montevideo.
Venezuela: Biblioteca Nacional, Carácas.
Victoria: Public Library, Melbourne.
Western Australia: Public Library of Western Australia, Perth.
Württemberg: Königliche Landesbibliothek, Stuttgart.

DEPOSITORIES OF PARTIAL SETS.

Alberta: Legislative Library, Edmonton.
Alsace-Lorraine: K. Ministerium für Elsass-Lothringen, Strassburg.
Bolivia: Ministerio de Colonización y Agricultura, La Paz.
Bremen: Senatskommission für Reichs- und Auswärtige Angelegenheiten.
British Columbia: Legislative Library, Victoria.
Bulgaria: Minister of Foreign Affairs, Sofia.
Ceylon: United States Consul, Colombo.
Ecuador: Biblioteca Nacional, Quito.

Egypt: Bibliothèque Khédiviale, Cairo.
Guatemala: Secretary of the Government, Guatemala.
Hamburg: Senatskommission für die Reichs- und Auswärtigen Angelegenheiten.
Hesse: Grossherzogliche Hof-Bibliothek, Darmstadt.
Honduras: Secretary of the Government, Tegucigalpa.
Jamaica: Colonial Secretary, Kingston.
Liberia: Department of State, Monrovia.
Lourenço Marquez: Government Library, Lourenço Marquez.
Malta: Lieutenant-Governor, Valetta.
Montenegro: Ministère des Affaires Étrangères, Cetinje.
Natal: Colonial Secretary's Office, Pietermaritzburg.
New Brunswick: Legislative Library, St. John.
Newfoundland: Colonial Secretary, St. John's.
Nicaragua: Superintendente de Archivos Nacionales, Managua.
Northwest Territories: Government Library, Regina.
Nova Scotia: Provincial Secretary of Nova Scotia, Halifax.
Orange River Colony: Government Library, Bloemfontein.
Panama: Secretaria de Relaciones Exteriores, Panama.
Paraguay: Oficina General de Informaciones y Canjes y Commisaria General de Inmigracion, Asuncion.
Prince Edward Island: Legislative Library, Charlottetown.
Roumania: Academia Romana, Bucarest.
Salvador: Ministerio de Relaciones Exteriores, San Salvador.
Siam: Department of Foreign Affairs, Bangkok.
Straits Settlements: Colonial Secretary, Singapore.
United Provinces of Agra and Oudh: under Secretary to Government, Allahabad.
Vienna: Bürgermeister der Haupt- und Residenz-Stadt.

INTERPARLIAMENTARY EXCHANGE OF THE OFFICIAL JOURNAL,

As mentioned in previous reports, a resolution of the Congress was approved March 4, 1909, setting aside such number as might be required, not exceeding 100 copies, of the daily issue of the Congressional Record for exchange, through the agency of the Smithsonian Institution, with the legislative chambers of such foreign governments as might agree to send to the United States in return current copies of their parliamentary record or like publication. The purpose of this resolution was to enable the Institution, on the part of the United States, to more fully carry into effect the provisions of the convention concluded at Brussels in 1886, providing for the immediate exchange of the official journal.

The Governments of the Argentine Republic, Denmark, and Great Britain have entered into this exchange during the year. A complete list of the countries to which the Congressional Record is now sent is given below:

Argentine Republic.
Australia.
Austria.
Baden.
Belgium.
Brazil.
Canada.
Cape of Good Hope.
Cuba.
Denmark.
France.
Great Britain.
Greece.
Guatemala.
Honduras.
Hungary.
Italy.
New South Wales.
New Zealand.
Portugal.
Prussia.
Roumania.
Russia.
Servia.
Spain.
Switzerland.
Transvaal.
Uruguay.
Western Australia.

There are at present 29 countries with which the immediate exchange of the official journal is carried on. To some of these countries two copies of the Congressional Record are sent—one to the upper and one to the lower house of parliament—the total number transmitted being 34.

It may be repeated in this connection that the exchange here alluded to is separate and distinct from the exchange of official documents which has existed between the United States and other countries for many years. It is interparliamentary, and provides for the immediate transmission, direct by mail, of the official journal as soon as published.

LIST OF BUREAUS OR AGENCIES THROUGH WHICH EXCHANGES ARE TRANSMITTED.

The following is a list of bureaus or agencies through which the distribution of exchanges is effected. Those in the larger and many in the smaller countries forward to the Smithsonian Institution, in return, contributions for distribution in the United States:

Algeria, via France.
Angola, via Portugal.
Argentina: Comisión Protectora de Bibliotecas Populares, Reconquista 538, Buenos Aires.
Austria: K. K. Statistische Central-Commission, Vienna.
Azores, via Portugal.
Barbados: Imperial Department of Agriculture, Bridgetown.
Belgium: Service Belge des Échanges Internationaux, Rue du Musée 5, Brussels.
Bolivia: Oficina Nacional de Estadística, La Paz.
Brazil: Serviço de Permutações Internacionaes, Bibliotheca Nacional, Rio de Janeiro.
British Colonies: Crown Agents for the Colonies, London.[1]
British Guiana: Royal Agricultural and Commercial Society, Georgetown.
British Honduras: Colonial Secretary, Belize.
Bulgaria: Institutions Scientifiques de S. M. le Roi de Bulgarie, Sofia.
Canary Islands, via Spain.
Cape Colony: Government Stationery Department, Cape Town.
Chile: Servicio de Canjes Internacionales, Biblioteca Nacional, Santiago.
China: Zi-ka-wei Observatory, Shanghai.
Colombia: Oficina de Canjes Internacionales y Reparto, Biblioteca Nacional, Bogota.
Costa Rica: Oficina de Depósito y Canje de Publicaciones, San José.
Denmark: Kongelige Danske Videnskabernes Selskab, Copenhagen.
Dutch Guiana: Surinaamsche Koloniale Bibliotheek, Paramaribo.
Ecuador: Ministerio de Relaciones Exteriores, Quito.
Egypt: Director-General, Survey Department, Giza (Mudiria).
France: Service Français des Echanges Internationaux, 110 Rue de Grenelle, Paris.
Germany: Amerika-Institut, Berlin, N. W. 7.
Great Britain and Ireland: Messrs. William Wesley & Son, 28 Essex Street, Strand, London.
Greece: Bibliothèque Nationale, Athens.
Greenland, via Denmark.

[1] This method is employed for communicating with several of the British colonies with which no medium is available for forwarding exchanges direct.

Guadeloupe, via France.
Guatemala: Instituto Nacional de Varones, Guatemala.
Guinea, via Portugal.
Haiti: Secrétaire d'Etat des Relations Extérieures, Port au Prince.
Honduras: Biblioteca Nacional, Tegucigalpa.
Hungary: Dr. Julius Pikler, Municipal Office of Statistics, City Hall, Budapest.
Iceland, via Denmark.
India: India Store Department, India Office, London.
Italy: Ufficio degli Scambi Internazionali, Biblioteca Nazionale Vittorio Emanuele, Rome.
Jamaica: Institute of Jamaica, Kingston.
Japan: Imperial Library of Japan, Tokyo.
Java, via Netherlands.
Korea: His Imperial Japanese Majesty's Residency-General, Seoul.
Liberia: Department of State, Monrovia.
Lourenço Marquez: Government Library, Lourenço Marquez.
Luxemburg, via Germany.
Madagascar, via France.
Madeira, via Portugal.
Montenegro: Ministère des Affaires Étrangères, Cetinje.
Mozambique, via Portugal.
Natal: Agent-General for Natal, London.
Netherlands: Bureau Scientifique Central Néerlandais, Bibliothèque de l'Université, Leyden.
New Guinea, via Netherlands.
New South Wales: Board for International Exchanges, Public Library, Sydney.
New Zealand: Dominion Museum, Wellington.
Nicaragua: Ministerio de Relaciones Exteriores, Managua.
Norway: Kongelige Norske Frederiks Universitet Bibliotheket, Christiania.
Panama: Secretaria de Relaciones Exteriores, Panama.
Paraguay: Ministerio de Relaciones Exteriores, Asuncion.
Persia: Board of Foreign Missions of the Presbyterian Church, New York City.
Peru: Oficina de Reparto, Depósito y Canje Internacional de Publicaciones, Ministerio de Fomento, Lima.
Portugal: Serviço de Permutações Internacionaes, Bibliotheca Nacional, Lisbon.
Queensland: Board of Exchanges of International Publications, Parliament House, Brisbane.
Russia: Commission Russe des Echanges Internationaux, Bibliothèque Impériale Publique, St. Petersburg.
Salvador: Ministerio de Relaciones Exteriores, San Salvador.
Servia: Section Administrative du Ministère des Affaires Etrangères, Belgrade.
Siam: Department of Foreign Affairs, Bangkok.
South Australia: Public Library of South Australia, Adelaide.
Spain: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
Sumatra, via Netherlands.
Sweden: Kongliga Svenska Vetenskaps Akademien, Stockholm.
Switzerland: Service des Echanges Internationaux, Bibliothèque Fédérale Centrale, Bern.
Syria: Board of Foreign Missions of the Presbyterian Church, New York.
Tasmania: Royal Society of Tasmania, Hobart.
Transvaal: Government Library, Pretoria.

Trinidad: Victoria Institute, Port of Spain.
Tunis, via France.
Turkey: American Board of Commissioners for Foreign Missions, Boston.
Uruguay: Oficina de Canje Internacional, Montevideo.
Venezuela: Biblioteca Nacional, Caracas.
Victoria: Public Library of Victoria, Melbourne.
Western Australia: Public Library of Western Australia, Perth.

I may add here, as a matter of record, that I was appointed assistant secretary in charge of Library and Exchanges on June 1, 1911.

Respectfully submitted.

F. W. TRUE,
Assistant Secretary in Charge of Library and Exchanges.

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

Appendix IV.

REPORT ON THE NATIONAL ZOOLOGICAL PARK.

Sir: I have the honor to present herewith a report of the operations of the National Zoological Park for the fiscal year ending June 30, 1911.

The general appropriation made by Congress for that year was $100,000, and in addition to this an appropriation of $15,000 was made for roads and walks.

The cost of maintenance was $81,325, and the amount remaining from the general appropriation, $18,675, was expended in various improvements and repairs.

ACCESSIONS.

Among the important accessions of the year were a pair of Haytian solenodons, a rare insectivorous mammal, presented by Mr. and Mrs. Franklin Adams of the Pan American Union. A pair of northern fur seals was received from the United States Bureau of Fisheries, a fine female grizzly bear from Maj. H. C. Benson, acting superintendent of the Yellowstone National Park, and four Virginia deer from Gen. Joseph S. Smith, manager of the National Soldiers Home, Bangor, Maine. By purchase, the park obtained a hippopotamus, an East African buffalo, three prong-horn antelopes, a pair of reindeer, a large Asiatic macaque monkey, and various other animals. Some important animals were also obtained by exchange, as noted below. The accessions included about twenty species not before represented in the collection.

Early in its history the park exhibited for two years a hippopotamus which had been received as a loan. Since that was withdrawn the species has not been represented in the collection. The present animal, a female about 2 years old, is from East Africa and weighs 850 pounds. The buffalo was captured in German East Africa and is believed to be the form described as *Buffelus neumanni*. The African buffalo has for some time been rather difficult to obtain, and the park was fortunate in being able to secure a specimen at comparatively small cost. It was also fortunate in obtaining in western Texas a male and two female prong-horn antelopes, all adult, from which two vigorous young have been born. Through an animal dealer on the Pacific coast the large brown macaque monkey of southeastern Asia and several other species new to the collection were obtained which had not been procurable elsewhere.

EXCHANGES.

Surplus animals were disposed of by exchange as usual, in accordance with the terms of the act establishing the park. They were sent to the New York Zoological Park, the London Zoological Garden, and various dealers and private individuals. In return for these, the park secured a number of important animals, including a fine specimen each of bontebok, blessbok, and springbok, a small anteater, a pair of tenrecs (insectivorous mammals of Madagascar), and other mammals and birds. The bontebok and blessbok, which are very beautiful African antelopes, are especially valued, as the former now exists only in a few

semiwild herds in Cape Colony, 300 individuals, perhaps, remaining from the "thousands upon thousands" described by early hunters in South Africa, while the latter has been greatly reduced in numbers.

Whenever possible, direct exchange was made, but where the person who desired to obtain an animal from the park had nothing acceptable to offer, the exchange was effected through some one of the responsible dealers in animals.

Black-crowned night herons had bred so freely in the flying cage that it became a necessity to materially reduce their number and some were sent (as gifts) to the New York Zoological Park, London Zoological Garden, and the park departments of St. Louis and Rochester.

Animals in the collection June 30, 1911.

MAMMALS.

Grivet monkey (*Cercopithecus sabæus*)	1	American badger (*Taxidea americana*)	4
Green monkey (*Cercopithecus callitrichus*)	1	Common skunk (*Mephitis mephitica*)	2
Mona monkey (*Cercopithecus mona*)	2	Wolverine (*Gulo luscus*)	1
Diana monkey (*Cercopithecus diana*)	1	American marten (*Mustela americana*)	2
Sooty mangabey (*Cercocebus fuliginosus*)	2	Fisher (*Mustela pennantii*)	1
White-collared mangabey (*Cercocebus collaris*)	1	Common ferret (*Putorius putorius*)	1
Bonnet monkey (*Macacus sinicus*)	1	Black-footed ferret (*Putorius nigripes*)	3
Macaque monkey (*Macacus cynomolgus*)	5	North American otter (*Lutra canadensis*)	5
Pig-tailed monkey (*Macacus nemestrinus*)	3	Eskimo dog (*Canis familiaris*)	2
Rhesus monkey (*Macacus rhesus*)	15	Dingo (*Canis dingo*)	4
Brown macaque (*Macacus arctoides*)	4	Gray wolf (*Canis occidentalis*)	6
Japanese monkey (*Macacus fuscatus*)	4	Black wolf (*Canis occidentalis*)	1
Formosan rock-macaque (*Macacus cyclopis*)	1	Coyote (*Canis latrans*)	4
Black ape (*Cynopithecus niger*)	1	Woodhouse's coyote (*Canis frustror*)	5
Anubis baboon (*Papio anubis*)	1	Crab-eating dog (*Canis cancrivorus*)	1
East African baboon (*Papio cynocephalus*)	1	Red fox (*Vulpes pennsylvanicus*)	4
Chacma (*Papio porcarius*)	1	Swift fox (*Vulpes velox*)	2
Mandrill (*Papio maimon*)	4	Arctic fox (*Vulpes lagopus*)	2
Drill (*Papio leucophæus*)	1	Gray fox (*Urocyon cinereo-argenteus*)	6
Gray spider monkey (*Ateles geoffroyi*)	1	Striped hyena (*Hyæna striata*)	1
White-throated capuchin monkey (*Cebus hypoleucus*)	3	African palm civet (*Viverra civetta*)	1
Brown monkey (*Cebus fatuellus*)	3	Common genet (*Genetta genetta*)	2
Weeper monkey (*Cebus capucinus*)	1	Sudan lion (*Felis leo*)	3
Ruffed lemur (*Lemur varius*)	1	Kilimanjaro lion (*Felis leo sabakiensis*)	5
Ring-tailed lemur (*Lemur catta*)	2	Tiger (*Felis tigris*)	2
Tenrec (*Centetes ecaudatus*)	2	Cougar (*Felis oregonensis hippolestes*)	2
Polar bear (*Thalarctos maritimus*)	3	Jaguar (*Felis onca*)	1
European brown bear (*Ursus arctos*)	3	Mexican jaguar (*Felis onca goldmani*)	1
Kadiak bear (*Ursus middendorffi*)	1	Leopard (*Felis pardus*)	2
Yakutat bear (*Ursus dalli*)	1	Black leopard (*Felis pardus*)	1
Alaskan brown bear (*Ursus gyas*)	5	Serval (*Felis serval*)	1
Kidder's bear (*Ursus kidderi*)	1	Ocelot (*Felis pardalis*)	1
Himalayan bear (*Ursus thibetanus*)	1	Canada lynx (*Lynx canadensis*)	1
Grizzly bear (*Ursus horribilis*)	4	Bay lynx (*Lynx rufus*)	4
Black bear (*Ursus americanus*)	9	Spotted lynx (*Lynx rufus texensis*)	1
Cinnamon bear (*Ursus americanus*)	3	Florida lynx (*Lynx rufus floridanus*)	1
Sloth bear (*Melursus ursinus*)	1	Steller's sea lion (*Eumetopias stelleri*)	1
Kinkajou (*Cercoleptes caudivolvulus*)	1	California sea lion (*Zalophus californianus*)	2
Cacomistle (*Bassariscus astuta*)	1	Harbor seal (*Phoca vitulina*)	3
Gray coatimundi (*Nasua narica*)	3	Fox squirrel (*Sciurus niger*)	10
Raccoon (*Procyon lotor*)	17	Western fox squirrel (*Sciurus ludovicianus*)	8
		Gray squirrel (*Sciurus carolinensis*)	40
		Black squirrel (*Sciurus carolinensis*)	20
		Prairie dog (*Cynomys ludovicianus*)	71
		Alpine marmot (*Arctomys marmotta*)	3

Woodchuck (*Arctomys monax*)	3
American beaver (*Castor canadensis*)	4
Coypu (*Myocastor coypus*)	3
Hutia-conga (*Capromys pilorides*)	2
Indian porcupine (*Hystrix leucura*)	2
Mexican agouti (*Dasyprocta mexicana*)	1
Azara's agouti (*Dasyprocta azaræ*)	2
Golden agouti (*Dasyprocta aguti*)	1
Hairy-rumped agouti (*Dasyprocta prymnolopha*)	5
Paca (*Cœlogenys paca*)	1
Guinea pig (*Cavia cutleri*)	13
Patagonian cavy (*Dolichotis patagonica*)	2
Domestic rabbit (*Lepus cuniculus*)	41
Cape hyrax (*Procavia capensis*)	2
Indian elephant (*Elephas maximus*)	1
Brazilian tapir (*Tapirus americanus*)	2
Grevy's zebra (*Equus grevyi*)	1
Zebra-donkey hybrid (*Equus grevyi-asinus*)	1
Grant's zebra (*Equus burchelli granti*)	1
Collared peccary (*Dicotyles angulatus*)	8
Wild boar (*Sus scrofa*)	1
Northern wart hog (*Phacochœrus africanus*)	2
Hippopotamus (*Hippopotamus amphibius*)	1
Guanaco (*Lama huanachus*)	3
Llama (*Lama glama*)	6
Alpaca (*Lama pacos*)	2
Vicugna (*Lama vicugna*)	2
Bactrian camel (*Camelus bactrianus*)	3
Muntjac (*Cervulus muntjac*)	1
Sambar deer (*Cervus aristotelis*)	1
Philippine deer (*Cervus philippinus*)	1
Hog deer (*Cervus porcinus*)	4
Barasingha deer (*Cervus duvaucelii*)	10
Axis deer (*Cervus axis*)	5
Japanese deer (*Cervus sika*)	9
Red deer (*Cervus elaphus*)	13
American elk (*Cervus canadensis*)	9
Fallow deer (*Cervus dama*)	8
Reindeer (*Rangifer tarandus*)	2
Virginia deer (*Odocoileus virginianus*)	5
Mule deer (*Odocoileus hemionus*)	2
Columbian black-tailed deer (*Odocoileus columbianus*)	1
Cuban deer (*Odocoileus* sp.)	1
Prong-horn antelope (*Antilocapra americana*)	5
Coke's hartebeest (*Bubalis cokei*)	2
Bontebok (*Damaliscus pygargus*)	1
Blessbok (*Damaliscus albifrons*)	1
White-tailed gnu (*Connochætes gnu*)	1
Defassa water buck (*Cobus defassa*)	1
Indian antelope (*Antilope cervicapra*)	3
Springbuck (*Antidorcas euchore*)	1
Grant's gazelle (*Gazella granti*)	1
Nilgai (*Boselaphus tragocamelus*)	2
Congo harnessed antelope (*Tragelaphus gratus*)	3
East African eland (*Oreas canna pattersonianus*)	1
Chamois (*Rupicapra tragus*)	3
Tahr (*Hemitragus jemlaicus*)	6
Common goat (*Capra hircus*)	4
Angora goat (*Capra hircus*)	4
Barbary sheep (*Ovis tragelaphus*)	13
Barbados sheep (*Ovis aries-tragelaphus*)	1
Anoa (*Anoa depressicornis*)	1
East African buffalo (*Buffelus neumanni*)	1
Zebu (*Bibos indicus*)	3
Yak (*Poephagus grunniens*)	6
American bison (*Bison americanus*)	12
Hairy armadillo (*Dasypus villosus*)	2
Wallaroo (*Macropus robustus*)	4
Red-necked wallaby (*Macropus ruficollis*)	1
Brush-tailed rock kangaroo (*Petrogale penicillata*)	2
Virginia opposum (*Didelphys marsupialis*)	2

BIRDS.

European blackbird (*Merula merula*)	1
Catbird (*Dumetella carolinensis*)	1
Brown thrasher (*Toxostoma rufum*)	1
Japanese robin (*Liothrix luteus*)	2
Laughing thrush (*Garrulax leucolophus*)	2
Orange-checked waxbill (*Estrelda melpoda*)	8
Cordon-bleu (*Estrelda phœnicotis*)	8
Cut-throat finch (*Amadina fasciata*)	4
Zebra finch (*Amadina castanotis*)	2
Black-headed finch (*Munia atricapilla*)	2
White-headed finch (*Munia maja*)	5
Nutmeg finch (*Munia punctularia*)	4
Java sparrow (*Munia oryzivora*)	10
White Java sparrow (*Munia oryzivora*)	6
Parson finch (*Poëphila cincta*)	1
Bearded finch (*Spermophila sp.*)	2
Madagascar weaver (*Foudia madagascariensis*)	4
Red-billed weaver (*Quelea quelea*)	8
Whydah weaver (*Vidua paradisea*)	4
Painted bunting (*Passerina ciris*)	2
Red-crested cardinal (*Paroaria cucullata*)	10
Common cardinal (*Cardinalis cardinalis*)	1
Rose-breasted grosbeak (*Zamelodia ludoviciana*)	1
Siskin (*Spinus spinus*)	2
European goldfinch (*Carduelis elegans*)	1
Yellow hammer (*Emberiza citrinella*)	2
Common canary (*Serinus canarius*)	12
Bullfinch (*Pyrrhula europæa*)	13
Cowbird (*Molothrus ater*)	1
Purple grackle (*Quiscalus quiscula*)	1
Red-winged blackbird (*Agelaius phœniceus*)	2
Common mynah (*Acridotheres tristis*)	1
European raven (*Corvus corax*)	1
American raven (*Corvus corax sinuatus*)	1
Blue jay (*Cyanocitta cristata*)	3

European magpie (*Pica pica*) 1
American magpie (*Pica pica hudsonica*) 2
Piping crow (*Gymnorhina tibicen*) 2
Giant kingfisher (*Dacelo gigas*) 1
Sulphur-crested cockatoo (*Cacatua galerita*) 3
White cockatoo (*Cacatua alba*) 6
Leadbeater's cockatoo (*Cacatua leadbeateri*) 1
Bare-eyed cockatoo (*Cacatua gymnopis*) 2
Roseate cockatoo (*Cacatua roseicapilla*) 3
Gang-gang cockatoo (*Callocephalon galeatum*) 1
Yellow and blue macaw (*Ara ararauna*) 2
Red and yellow and blue macaw (*Ara macao*) 3
Red and blue macaw (*Ara chloroptera*) 3
Great green macaw (*Ara militaris*) 1
Kea (*Nestor notabilis*) 1
Mexican conure (*Conurus holochlorus*) 1
Carolina paroquet (*Conuropsis carolinensis*) 2
Tovi parrakeet (*Brotogerys jugularis*) 1
Cuban parrot (*Amazona leucocephala*) 2
Orange-winged amazon (*Amazona amazonica*) 1
Porto Rican amazon (*Amazona vittata*) 1
Yellow-shouldered amazon (*Amazona ochroptera*) 2
Yellow-fronted amazon (*Amazona ochrocephala*) 2
Yellow-headed amazon (*Amazona levaillanti*) 1
Lesser vasa parrot (*Coracopsis nigra*) 2
Pigeon parrakeet (*Palæornis columboides*) 1
Love bird (*Agapornis pullaria*) 3
Green parrakeet (*Loriculus* sp.) 2
Pennant's parrakeet (*Platycercus elegans*) 1
Pale-headed parrakeet (*Platycercus pallidiceps*) 1
Shell parrakeet (*Melopsittacus undulatus*) 1
Great horned owl (*Bubo virginianus*) 13
Arctic horned owl (*Bubo virginianus subarcticus*) 2
Screech owl (*Otus asio*) 2
Barred owl (*Strix varia*) 2
Barn owl (*Aluco pratincola*) 1
Sparrow hawk (*Falco sparverius*) 1
Bald eagle (*Haliæëtus leucocephalus*) 13
Alaskan bald eagle (*Haliæëtus leucocephalus alascanus*) 1
Short-tailed eagle (*Terathopius ecaudatus*) 1
Harpy eagle (*Thrasaëtus harpyia*) 1
Crowned hawk eagle (*Spizaëtus coronatus*) 1
East African hawk (*Buteo* sp.) 1
Red-tailed hawk (*Buteo borealis*) 2
Red-shouldered hawk (*Buteo lineatus*) 1
Sharp-shinned hawk (*Accipiter velox*) 1
Venezuelan hawk 1
Caracara (*Polyborus cheriway*) 3
Lammergeyer (*Gypaëtus barbatus*) 1
South American condor (*Sarcorhamphus gryphus*) 2
California condor (*Gymnogyps californianus*) 3
Griffon vulture (*Gyps fulvus*) 2
Egyptian vulture (*Neophron percnopterus*) 1
Pileated vulture (*Neophron pileatus*) 1
Turkey vulture (*Cathartes aura*) 5
Black vulture (*Catharista urubi*) 1
King vulture (*Gypagus papa*) 1
Ring dove (*Columba palumbus*) 17
Red-billed pigeon (*Columba flavirostris*) 4
Mourning dove (*Zenaidura macroura*) 9
Peaceful dove (*Geopelia tranquilla*) 2
Cape dove (*Œna capensis*) 2
Crested pigeon (*Ocyphaps lophotes*) 1
Chachalaca (*Ortalis vetula*) 3
Purplish guan (*Penelope purpurascens*) 1
Mexican curassow (*Crax globicera*) 2
Chapman's curassow (*Crax chapmani*) 1
Daubenton's curassow (*Crax daubentoni*) 1
Wild turkey (*Meleagris gallopavo silvestris*) 18
Peafowl (*Pavo cristata*) 37
Jungle fowl (*Gallus bankiva*) 1
Reeves's pheasant (*Phasianus reevesi*) 1
Golden pheasant (*Thaumalea picta*) 1
Silver pheasant (*Euplocamus nycthemerus*) 2
Black cock (*Lyrurus tetrix*) 1
European quail (*Coturnix communis*) 1
Hungarian partridge (*Perdix perdix*) 3
Bobwhite (*Colinus virginianus*) 1
Mountain quail (*Oreortyx picta*) 4
Scaled quail (*Callipepla squamata*) 2
California quail (*Lophortyx californica*) 1
Massena quail (*Cyrtonyx montezumæ*) 10
Purple gallinule (*Porphyrio cœrulea*) 1
Black-backed gallinule (*Porphyrio melanotus*) 2
American coot (*Fulica americana*) 11
Flightless rail (*Ocydromus australis*) 2
Common cariama (*Cariama cristata*) 1
Demoiselle crane (*Anthropoides virgo*) 5
Crowned crane (*Balearica pavonina*) 2
Sandhill crane (*Grus mexicana*) 2
Australian crane (*Grus australasiana*) 1
Indian white crane (*Grus leucogeranus*) 2
Thick-knee (*Œdicnemus grallarius*) 1
Ruff (*Machetes pugnax*) 4
Black-crowned night heron (*Nycticorax nycticorax nævius*) 81
Little blue heron (*Florida cærulea*) 1
Louisiana heron (*Hydranassa tricolor ruficollis*) 1

Reddish egret (*Dichromanassa rufescens*)	3
Snowy egret (*Egretta candidissima*)	4
Great white heron (*Herodias egretta*)	1
Great blue heron (*Ardea herodias*)	4
Boat-bill (*Cancroma cochlearia*)	2
Black stork (*Ciconia nigra*)	1
White stork (*Ciconia ciconia*)	2
Marabou stork (*Leptoptilus dubius*)	1
Wood ibis (*Mycteria americana*)	2
Sacred ibis (*Ibis æthiopica*)	4
White ibis (*Guara alba*)	21
Roseate spoonbill (*Ajaja ajaja*)	3
European flamingo (*Phœnicopterus antiquorum*)	6
Trumpeter swan (*Olor buccinator*)	2
Whistling swan (*Olor columbianus*)	2
Mute swan (*Cygnus gibbus*)	2
Muscovy duck (*Cairina moschata*)	2
White muscovy duck (*Cairina moschata*)	3
Wandering tree-duck (*Dendrocygna arcuata*)	7
Fulvous tree-duck (*Dendrocygna bicolor*)	2
Australian wood-duck (*Chenonetta jubata*)	1
Egyptian goose (*Chenalopex ægyptiacus*)	1
Brant (*Branta bernicla glaucogastra*)	1
Canada goose (*Branta canadensis*)	8
Hutchins's goose (*Branta canadensis hutchinsii*)	4
Lesser snow goose (*Chen hyperboreus*)	2
Greater snow goose (*Chen hyperboreus nivalis*)	1
American white-fronted goose (*Anser albifrons gambeli*)	6
Chinese goose (*Anser cygnoides*)	3
Red-headed duck (*Marila americana*)	2
Wood duck (*Aix sponsa*)	12
Mandarin duck (*Dendronessa galericulata*)	8
Pintail (*Dafila acuta*)	6
Shoveler duck (*Spatula clypeata*)	3
Blue-winged teal (*Querquedula discors*)	1
Green-winged teal (*Nettion carolinense*)	1
Black duck (*Anas rubripes*)	2
Mallard (*Anas platyrhynchos*)	13
American white pelican (*Pelecanus erythrorhynchos*)	4
European white pelican (*Pelecanus onocrotalus*)	2
Roseate pelican (*Pelecanus roseus*)	1
Brown pelican (*Pelecanus occidentalis*)	4
Black-backed gull (*Larus marinus*)	1
Herring gull (*Larus argentatus*)	1
American herring gull (*Larus argentatus smithsonianus*)	6
Laughing gull (*Larus atricilla*)	3
Gannet (*Sula bassana*)	1
Florida cormorant (*Phalacrocorax auritus floridanus*)	8
Mexican cormorant (*Phalacrocorax vigua mexicanus*)	1
Water turkey (*Anhinga anhinga*)	6
Somali ostrich (*Struthio molybdophanes*)	1
Common cassowary (*Casuarius galeatus*)	1
Common rhea (*Rhea americana*)	3
Emu (*Dromæus novæ hollandiæ*)	1

REPTILES.

Alligator (*Alligator mississippiensis*)	16
Painted turtle (*Chrysemys picta*)	4
Diamond-back terrapin (*Malacoclemys palustris*)	1
Three-toed box-tortoise (*Cistudo triunguis*)	6
Painted box-tortoise (*Cistudo ornata*)	5
Gopher turtle (*Xerobates polyphemus*)	1
Duncan Island tortoise (*Testudo ephippium*)	2
Albemarle Island tortoise (*Testudo vicina*)	2
Comb lizard (*Ctenosaura* sp.)	1
Alligator lizard (*Sceloporus undulatus*)	2
Horned lizard (*Phrynosoma cornutum*)	1
Gila monster (*Heloderma suspectum*)	4
Green lizard (*Lacerta viridis*)	1
Anaconda (*Eunectes murinus*)	2
Common boa (*Boa constrictor*)	1
Antillean boa (*Boa divinilogua*)	1
Cuban tree-boa (*Epicrates angulifer*)	3
Spreading adder (*Heterodon platyrhinus*)	2
Green snake (*Cyclophis æstivus*)	1
Black snake (*Zamenis constrictor*)	3
Coach-whip snake (*Zamenis flagellum*)	2
Corn snake (*Coluber guttatus*)	1
Common chicken snake (*Coluber quadrivittatus*)	2
Gopher snake (*Compsosoma corais couperii*)	1
Pine snake (*Pityophis melanoleucus*)	11
Bull snake (*Pityophis sayi*)	2
Texas chicken snake (*Ophibolus calligaster*)	2
King snake (*Ophibolus getulus*)	2
Texas garter snake (*Eutænia proxima*)	1
Water moccasin (*Ancistrodon piscivorus*)	1
Copperhead (*Ancistrodon contortrix*)	3
Diamond rattlesnake (*Crotalus adamanteus*)	4
Banded rattlesnake (*Crotalus horridus*)	2

GIFTS.

Mr. and Mrs. Franklin Adams, Pan American Union, two Haitian solenodons.
Miss M. Alexander, Moorefield, W. Va., a brown Capuchin monkey.

Dr. Paul Bartsch, Washington, D. C., two common crows.
Frederick Carl, jr., Washington, D. C., two screech owls.
Miss Catharine Carroll, Washington, D. C., a barn owl.
E. S. Case, Takoma Park, D. C., three blue jays.
Miss M. B. Cole, Washington, D. C., an alligator.
Mrs. Mary F. Crown, Washington, D. C., a yellow-headed Amazon parrot.
Mrs. R. S. Day, Washington, D. C., a common canary.
Boris de Street, Washington, D. C., an alligator.
J. R. Eddy, Lamedeer, Mont., an American badger.
Mr. Eustis, Leesburg, Va., a red-tailed hawk.
Dr. Cecil French, Washington, D. C., four Hungarian quail.
Guy M. Gribble, Buckhannon, W. Va., a red-tailed hawk.
Jesse Hand, jr., Belleplain, N. J., two king snakes.
Mr. C. A. Holland, Fenwick, Va., a bittern.
Clarence Howard, Washington, D. C., a copperhead snake.
E. C. Howe, Washington, D. C., two alligators.
W. H. Kelly, Sandusky, Ohio, two bald eagles.
Mr. Lansdale, Washington, D. C., two common opossums.
Carvel Leary, Washington, D. C., a guinea pig.
Miss Frances McMullen, Largo, Fla., an alligator snapping turtle.
C. W. Marks, Berryville, Va., a black snake.
S. S. Paschals, Chevy Chase, Md., two zebra finches.
L. E. Perry, Gorgona, Canal Zone, a spider monkey.
F. W. Pilling, Washington, D. C., 10 common canaries, a red-crested cardinal and 2 white Java sparrows.
Mrs. J. E. Pleitner, Washington, D. C., a green Amazon parrot.
N. Schutz, Washington, D. C., a screech owl.
John B. Smith, Renovo, Pa., a banded rattlesnake.
Mrs. H. Clay Stewart, Washington, D. C., two common canaries.
J. P. Taylor, Washington, D. C., a copperhead snake and a black snake.
Dr. James R. Tubman, Washington, D. C., a great horned owl.
United States Bureau of Fisheries, two northern fur seals.
James Worcester, Washington, D. C., an alligator.
Unknown donors, a hawk, a parrakeet, and a woodchuck.

LOSSES OF ANIMALS.

The most important losses during the year were a pair of clouded leopards, a lion, and a young Alaskan brown bear from parasitism; a leucoryx, a water buck, and a nilgai, from tuberculosis; a female American bison and a caribou, in the collection for 10 years, from peritonitis; two solenodons from septicemia, and two young fur seals from enteritis and heat stroke.

Dead animals, to the number of 142, were transferred to the United States National Museum. Autopsies were made, as usual, by the Pathological Division of the Bureau of Animal Industry, United States Department of Agriculture.[1]

[1] The causes of death were as follows: Pneumonia, 10; tuberculosis, 8; pulmonary edema, 1; aspergillosis, 7; pseudomembranous tracheitis, 1; enteritis, 9; gastritis, 1; gastroenteritis, 7; pneumoenteritis, 1; intestinal coccidiosis, 7; peritonitis, 6; nephritis, 2; fatty degeneration of liver, 1; parasitism, 3; stomatitis, 2; strangulated hernia, 1; rupture of gizzard, 1; internal hemorrhage, 1; abscess of scrotum, 1; abscess of head, 1; unable to deliver young, 1; duodenitis, 1; colitis, 1; echinococcosis, 1; necrobacillosis, 1; pyoscianeusbacillosis, 1; porocephalosis, 1; septicemia, 3; enterotoxism, 1; cystitis, 1; endocarditis, 1; visceral gout, 1; sarcomatosis, 2; cancer of pouch, 1; leukemia, 1; icterus, 1; impaction, 3; duodenal obstruction, 1; starvation, 2; accidents and injuries, 13; killed because unfit for exhibition, 4; result of autopsy indeterminate, 3; no cause found, 4.

Statement of the collection.

ACCESSIONS DURING THE YEAR.

Presented	65
Received from Yellowstone National Park	1
Received in exchange	13
Lent	11
Purchased	130
Born and hatched in National Zoological Park	115
Total	335

SUMMARY.

Animals on hand July 1, 1910	1,424
Accessions during the year	335
Total	1,759
Deduct loss (by exchange, death, and returning of animals)	345
On hand June 30, 1911	1,414

Class.	Species.	Individuals.
Mammals	157	636
Birds	186	685
Reptiles	33	93
Total	376	1,414

VISITORS.

The number of visitors to the park during the year was 521,440, a daily average of 1,428. The largest number in any one month was 95,535, in April, 1911, a daily average for the month of 3,184.

During the year there visited the park 169 schools, Sunday schools, classes, etc., with 4,966 pupils, a monthly average of 414 pupils. This number is an increase over the previous year of 14 schools, 1,083 pupils, and an increase in the monthly average of 90 pupils. While most of the classes were from the District of Columbia, 47 of them were from neighboring States, and classes came from Meriden, Hopedale, Norton, North Attleboro, Clinton, Hudson, and Whitman, Massachusetts; Dover, Peterboro, Lancaster, and Exeter, New Hampshire; Bath, Augusta, Biddeford, Gardiner, and Sanford, Maine; Bellows Falls, Vermont; Raleigh, North Carolina; Middleport (two) and Penn Yan, New York; Waynesburg, Pennsylvania; and Hartford, Connecticut.

IMPROVEMENTS.

A house for zebras, a frame building 35 feet square, was constructed, providing four good-sized stalls with yards attached. This is now occupied by a male Grant's zebra, the male Grevy's zebra, which was returned from the experiment station of the Bureau of Animal Industry at Bethesda, Maryland, after use there in breeding, and a hybrid from the latter animal and a domestic ass.

The existing yards on the west side of the antelope house were too small, and the fences around them, which were of temporary character, had seriously

deteriorated. The construction of new steel fences was begun, inclosing a considerably larger area than the former yards, and was nearly completed by the close of the year. The yards on the north and east sides of the antelope house, which had been begun during the previous year, were completed.

The temporary bird house, which had been in very bad condition, was extensively repaired. New roof covering was put on, and the wooden floor, some of the walls and cages, and much other interior work were renewed.

Some alterations were made in the large cages in the lion house to permit more convenient handling of the animals during feeding and the cleaning of the cages. The woodwork of this portion of the building was also refinished.

The public comfort room for women, which was in a very dilapidated condition, was removed to make way for the yards of the antelope house, and a new comfort room was constructed beneath the outdoor cages of the small mammal house. A small frame building for the same purpose was erected near the Adams Mill Road entrance, that portion of the park being a much frequented resort for women with young children.

A new public comfort room for men was also constructed in the basement of the antelope house, providing permanent conveniences, which are much better and more adequate than have existed heretofore.

The drainage culvert in the beaver valley was extended to the flying cage, a distance of 800 feet, thus providing sewerage, as well as for the carrying away of surface water without the erosion which had occurred previously.

Foundations were laid for cages on the east side of the small mammal house, and a concrete walk was constructed there.

Various small improvements and repairs were made. A cage was built in the lion house with a pool for the young hippopotamus, which was received in May; a paddock with shelter was built for the chamois; an inclosure and pool for fur seals; the condor cage and cage for horned owls were extensively repaired; an inclosure with shelter was built for kangaroos; an additional watch house was built; new wagon scales were set near the shop and coal vault; and the heating conduit and mains from the central heating plant were extended to the elephant house and zebra house.

The cost of this work was:

House for zebras	$2,500
New yards on west side of antelope house	1,775
Completing yards on north and east sides of antelope house	250
Repairs to temporary bird house	1,000
Alterations and repairs to lion house	600
Cage for hippopotamus	275
Paddock for chamois	300
Inclosure and pool for fur seals	275
Repairing condor and owl cages	350
Inclosure for kangaroos	75
Extending drainage culvert	1,500
New concrete walk and cage foundations at small mammal house, with retaining walls, etc	1,050
Additional watch house	125
Extending heating conduit and mains	400
New wagon scales at shop	250
Accessory comfort room for women	350
Women's comfort room	750
Men's comfort room	750

ROADWAYS AND WALKS.

From the appropriation for reconstructing and repairing roadways and walks 4,770 linear feet, or nine-tenths of a mile of road, was treated, from 10 to 45 feet wide, averaging slightly more than 20 feet, a total of 10,700 square yards. The work varied from merely reshaping and supplying a top layer of stone to furnishing the entire thickness of roadbed material, with considerable excavating and filling in some places where the existing grades were too steep. One thousand six hundred square yards (the "concourse") were finished with tarvia. The work cost from 22 cents to $1 per square yard, and the total amount expended for roads was $7,220.

During the year 9,260 linear feet, or 1¾ miles, of walks were laid or repaired. They were from 6 to 16 feet wide, or an average width of about 9 feet, comprising in all 9,230 square yards. Of this about 6,500 square yards was old macadam walk, the remainder gravel or dirt walks. A considerable amount of excavation and filling had to be done in certain places in order to secure reasonably uniform grades, and steps were constructed at points where the grade had before been too steep. The walks are of stone macadam, the surface treated with tarvia by the penetration method. The cost of laying them was from 35 cents to 85 cents per square yard. A considerable amount of work had to be done also in providing proper drainage. The total expenditure for walks was $7,780.

Respectfully submitted.

FRANK BAKER, *Superintendent.*

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

Appendix V.

REPORT ON THE ASTROPHYSICAL OBSERVATORY.

Sir: I have the honor to present the following report on the operations of the Smithsonian Astrophysical Observatory for the year ending June 30, 1911:

EQUIPMENT.

The equipment of the observatory is as follows:

(*a*) At Washington there is an inclosure of about 16,000 square feet, containing five small frame buildings used for observing and computing purposes, three movable frame shelters covering several out-of-door pieces of apparatus, and also one small brick building containing a storage battery and electrical distribution apparatus.

(*b*) At Mount Wilson, California, upon a leased plat of ground 100 feet square in horizontal projection, are located a one-story cement observing structure, designed especially for solar-constant measurements, and also a little frame cottage, 21 feet by 25 feet, for observer's quarters.

There were no important additions to the instrument equipment of the observatory during the year.

In 1909 the Smithsonian Institution, at the expense of the Hodgkins fund, erected on the summit of Mount Whitney, California (height 14,502 feet), a stone and steel house to shelter observers who might apply to the Institution for the use of the house to promote investigations in any branch of science. While this structure is not the actual property of the Astrophysical Observatory, it affords an excellent opportunity for observations in connection with those taken on Mount Wilson.

WORK OF THE YEAR.

In order to thoroughly confirm the results obtained on the summit of Mount Whitney (4,420 meters or 14,502 feet) in 1909, discussed in my last annual report, an expedition again occupied that place in August, 1910. The personnel consisted of the director and Mr. G. F. Marsh, of Lone Pine, California. Nearly all of the equipment for spectrobolometric work had been left on Mount Whitney through the winter and was found in good condition. Additional apparatus for measuring the brightness of the sky by day and by night was carried up by pack train under the care of Mr. Elder, of Lone Pine. The good fortune which had attended the 1909 expedition failed for a moment in 1910, and one mule, carrying the silver-disk pyrheliometer and other loading, rolled off among the rocks and was killed. The pyrheliometer fortunately received no injury.

Solar-constant measurements were made successfully on Mount Whitney in 1910 on three successive days. Mr. Fowle made solar-constant observations

simultaneously on Mount Wilson. I give below the results obtained at Mount Wilson and Mount Whitney in 1909 and 1910:

	Sept. 3, 1909.	Aug. 12, 1910.	Aug. 13, 1910.	Aug. 14, 1910.
Solar constant:				
Mount Wilson	1.943	1.943	1.924	1.904
Mount Whitney	1.959	1.979	1.933	1.956

Taking the mean of the differences between the results obtained simultaneously at the two stations, it appears that the results obtained on Mount Whitney average 1.4 per cent higher than those obtained on Mount Wilson. But considering that the optical apparatus used on Mount Wilson comprised a silvered glass mirror coelostat, an ultra-violet crown glass prism, and two silvered glass mirrors, while that on Mount Whitney comprised only a quartz prism and two magnalium mirrors, and, furthermore, that the pyrheliometers employed at the two stations were read at very different temperatures, it is probable that the slight difference found between the results may be due wholly to experimental differences and implies no discrepancy due to the difference of altitude between the two stations.

This conclusion seems worth emphasizing. We have now made simultaneously solar-constant determinations at sea level (Washington), at over a mile altitude (Mount Wilson), and again at Mount Wilson, and at nearly 3 miles altitude (Mount Whitney). Although both the quantity and the quality of the solar radiation found at these stations differ very much, neither the "solar constant" nor the distribution of the solar energy in the spectrum outside the atmosphere, as fixed by the wholly independent measurements at these three stations, differs more than would be expected in view of the unavoidable small errors of observation. We seem justified in concluding that we do, in fact, eliminate the effects of atmospheric losses and actually determine the true quantity and quality of the sun's radiation outside the atmosphere as we might do if we could observe in free space with no atmosphere at all to hinder.

Expeditions to Mount Wilson have now been made in 1905, 1906, 1908, 1909, and 1910. The last, like the others, continued from May until November. In the earlier years the observations were not made daily, but in 1908, 1909, and 1910 daily determinations of the solar constant were made when possible. As stated in earlier reports, the results indicate a variability of the sun. In order to show the strength of the argument for this conclusion, I give in the accompanying figure a diagram showing all the "solar constant" values obtained in the first four years of observation (fig. 1).

The "solar constant" results lie between 1.80 and 2.00 calories per square centimeter per minute. I call particular attention to the two later years. It will be noted that successive days' results march step by step regularly from low to high values and the reverse, and that this order of march is not the exception, but almost without exception the rule. This seems to render it highly improbable that the fluctuations are due to accidental error, for such a regularity of fluctuation is incompatible with that supposition. As it has now been shown that the altitude of the observing station is immaterial, at least for altitudes below 3 miles, it seems also reasonable to conclude that the fluctuation is not due to faulty estimates of the losses of radiation in the air. Hence the most probable conclusion is that the sun actually varies from day to

day in its output of radiation within limits of from 5 to 10 per cent in quantity and in irregular periods of from 5 to 10 days. This conclusion I state tentatively. Before it can be accepted without question it must be confirmed by showing that the results obtained day after day at another equally good station, at a great distance, confirm those obtained simultaneously at Mount Wilson. Such a final test, it is now expected, will be made during the coming fiscal year.

Summary of solar-constant values.

	Washington.	Mount Wilson.					Mount Whitney.	
	1902–1907	1905	1906	1908	1909	1910	1909	1910
Times observed	44	59	62	113	95	[1] 28	1	3
Mean value	1.960	1.925	1.921	1.929	1.896	1.914	1.959	1.956

[1] Other days of observation not yet ready.

General mean, 1.922 calories (15° C.) per square centimeter per minute.
Number of determinations, 405.

Other observations made on Mount Whitney.—Although the main purpose of the Mount Whitney expedition of 1910 was served by proving that the determinations of the solar constant of radiation are independent of the altitude of the observing station, advantage was taken of the unusual opportunity to make several other kinds of observations. Kapteyn's sky photometer was employed there on two successive nights to measure the relative brightness of the different regions of the night sky and to estimate the total quantity of sky illumination per square degree compared with that of a first-magnitude star. Yntema had employed similar apparatus in Holland. He found the average brightness of the Milky Way about two or three times that of nongalactic regions of the sky, such as the north polar region, but that the sky near the horizon was of about the same brightness as the Milky Way. He concluded that the sky at night is illuminated more by some terrestrial sources of light than by the stars.

The results obtained on Mount Whitney at nearly 3 miles elevation agreed in general with those of Yntema. The following is a summary of the principal points. Mean values are given:

Brightness of night sky.

[Polar brightness=1. Mount Whitney, 1909–1910.]

	Galactic latitude.				Near horizon.
	0° to±5°	±15° to ±30°	±45° to±60°	±60° to±75°	
Relative brightness	2.10	1.25	1.19	1.17	1.40

The total illumination from 1 square degree of polar sky was found to be 0.0746 that of one first-magnitude star in the zenith. It is possible that the fraction just given may be a little too small, owing to a source of error discovered after the observations were ended.

Computations from the Mount Whitney results confirm Yntema's conclusion that the great increase of brightness toward the horizon can not be due to any arrangement of starlight, but must be caused by some terrestrial source of light, perhaps a continuous faint aurora.

Bolometric measurements were made on Mount Whitney to determine the relative radiation of the sky by day in all directions, as compared with the

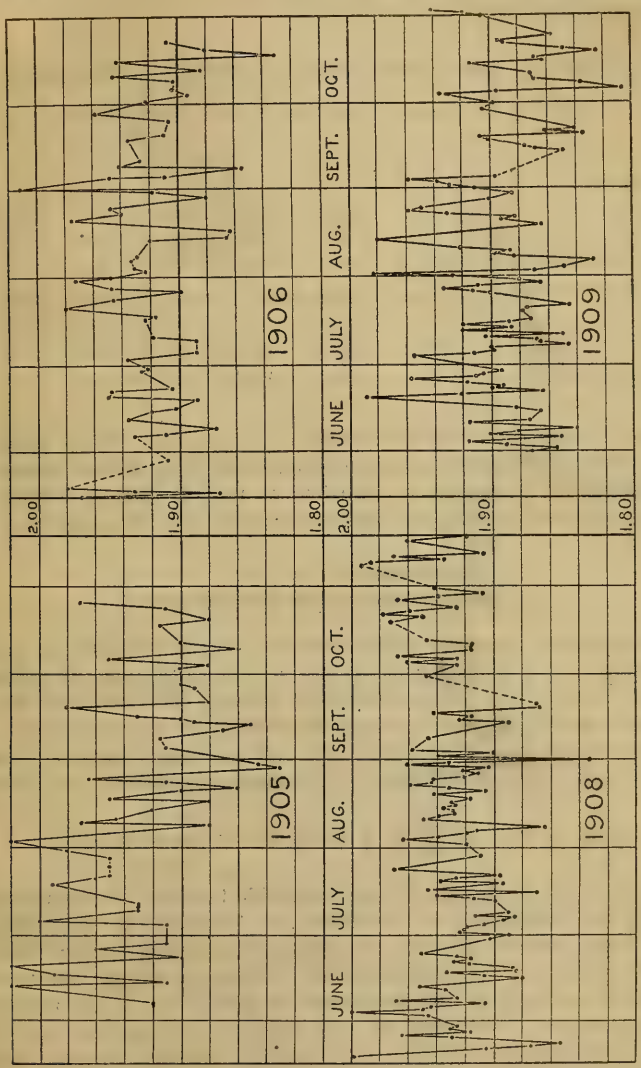

FIG. 1.—Solar constant values.

sun. These measurements were numerous and seem to have been successful, but are not yet reduced.

The sun's energy spectrum.—A summary has been prepared showing the mean result of determinations of the distribution of the sun's energy in the spectrum, as it would be found outside the atmosphere. The measurements on which it is based include Washington, Mount Wilson, and Mount Whitney work of 1903

to 1910, and have been made with many different optical systems. There is great difficulty in getting an accurate estimate of the relative losses suffered by rays of different wave lengths in traversing the spectroscope. Especially is this the case for the violet and ultra-violet rays, where these losses are greatest. The summary has shown that further determinations are needed to fix the distribution in the extreme ultra violet, and observations for this purpose were made in June, 1911, on Mount Wilson, but are not yet reduced. I give below the summary, excluding the work of 1911.

Intensities in normal solar spectrum, outside the atmosphere.

[Observed at Washington, Mount Wilson, Mount Whitney, 1903–1910.]

	μ	μ	μ	μ	μ	μ	μ
Wave length	0.30	0.35	0.40	0.45	0.47	0.50	0.60
Intensity	440	2,700	4,345	6,047	6,253	6,064	5,047
Probable error (percentage)	50 (?)	7.3	1.5	1.4	1.8	1.9	2.1
Wave length	0.80	1.0	1.3	1.6	2.0	2.5	3.0
Intensity	2,672	1,664	897	526	245	43	12
Probable error (percentage)	1.2	0.7	0.7	1.4	2.4	4.8	45(?)

The sun's temperature.—If we employ the so-called "Wien displacement formula," which connects the absolute temperature of a perfect radiation with the wave length of its maximum radiation, we may proceed as follows, to estimate the solar temperature, on the assumption that the sun is a perfect radiator:

$$\lambda_{max} T = 2930.$$

If $\lambda_{max} = 0.470\ \mu$ then T=6230° abs. C.

Another radiation formula is that of Stefan, which connects the total quantity of radiation of a perfect radiator per square centimeter per minute with the absolute temperature. Employing this formula, still assuming the sun to be a perfect radiator, its mean distance 149,560,000 kilometers, its mean diameter 696,000 kilometers, and the mean value of the solar constant of radiation 1.922 calories per square centimeter per minute, we proceed as follows:

$$76.8\times10^{-12}\times\left(\frac{696{,}000}{149{,}560{,}000}\right)^2 T^4 = 1.922 \quad T = 5830° \text{ abs. C.}$$

A third means of estimating the sun's probable temperature comes from comparisons of the distribution of the energy in its spectrum with that in the spectrum of the perfect radiator, as computed according to the Wien-Planck formula of spectrum energy distribution. The sun's energy curve and that of the perfect radiator at two temperatures are given in the accompanying illustration (fig. 2). It appears at once from this comparison that the sun's radiation differs greatly from that of the perfect radiator at any temperature. The solar radiation is greater in the infra-red spectrum, and much less in the ultra-violet spectrum, than that of perfect radiators giving approximately the same relative spectral distribution as the sun for visible rays. Taking everything in consideration, the solar energy spectrum seems most comparable with that of a perfect radiator between 6,000° and 7,000° in absolute temperature.

The causes of the discrepancies we have noted may be several. First, there is the influence of the selective absorption of rays in the Fraunhofer lines.

These lines are much crowded toward and within the ultra-violet spectrum, so that perhaps this indicates a principal reason for the weakness of the sun's spectrum in that region. Second, it seems probable that we are dealing with a mixture of rays from sources at different temperatures. The cause and

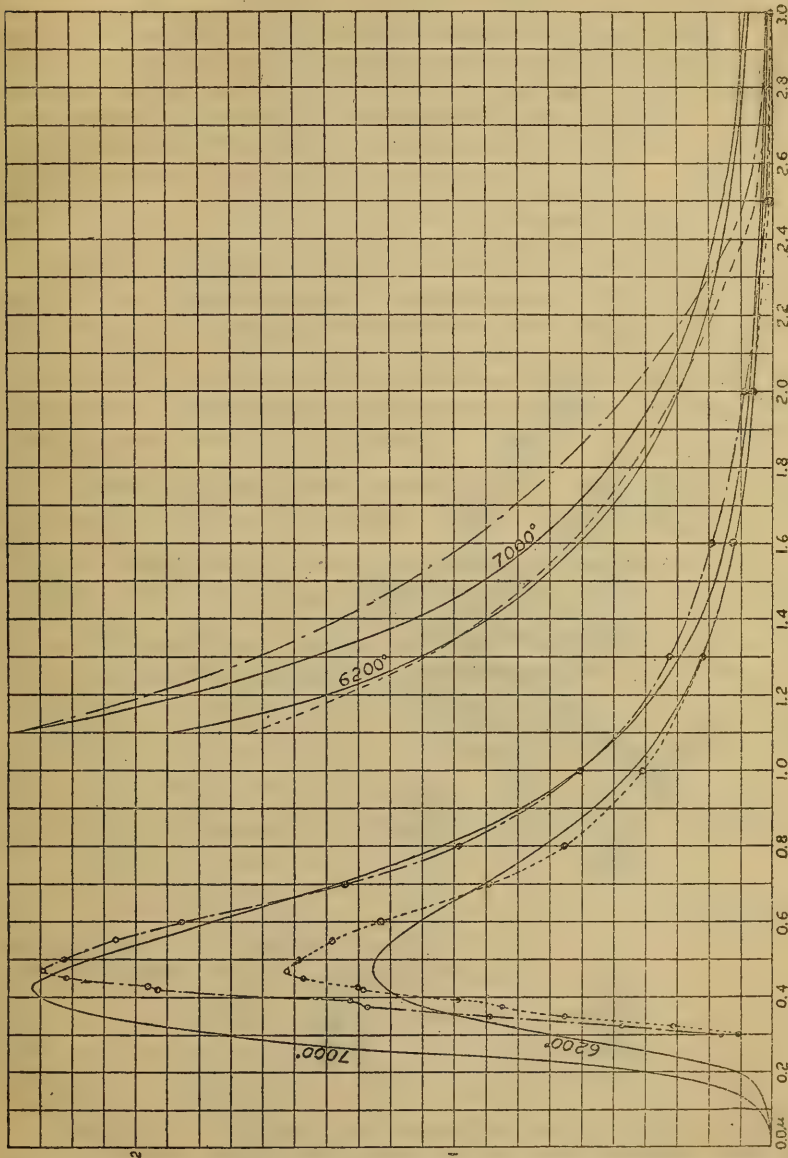

FIG. 2.—Energy spectrum of sun compared with black body.

effect of this difference may each be twofold: For, firstly, at the center of the sun's visible disk we look probably to deeper-lying and hence hotter layers than at the sun's edge, where the line of sight is oblique; and, secondly, since the transmission of the sun's atmosphere is probably like the earth's,

much less for violet and ultra-violet rays than for red and infra-red ones, we probably get infra-red rays from deeper-lying and hence hotter layers in the sun than we do ultra-violet ones.

We conclude that the solar radiation comes from sources ranging in temperature perhaps between the limits 5,000° and 7,000° absolute centigrade, but mostly from sources between 6,000° and 7,000°.

Washington observations.—Further experiments have been made, under Mr. Fowle's direction, on the transmission of radiation of great wave lengths through long columns of air containing known qualities of water vapor. Many of these observations are not yet reduced, so that it is not yet proper to give a numerical summary of results. The length of the column experimented upon has been increased to 800 feet. The measurements cover the infra-red spectrum, from the A line to a wave length of about 17μ. The observations of the water contents of the air column are made by means of pairs of wet and dry thermometers located at a number of points along the path. The air is thoroughly stirred before readings. Check experiments by Mr. Aldrich, in which he drew the air through phosphorus pentoxide tubes and weighed the water absorbed, have confirmed the accuracy of the water-vapor determinations. Mr. Fowle has made a preliminary comparison of the upper infra-red spectrum bands ρ, σ, τ, Φ, Ψ, and Ω, as observed through the tube with the same bands as observed through the whole atmosphere at Washington, Mount Wilson, and Mount Whitney. The results are most interesting, though not yet ripe for publication, and will probably lead to more exact knowledge of the total quantity of water vapor in the atmosphere, and its variation with the altitude of the observer and the season of the year.

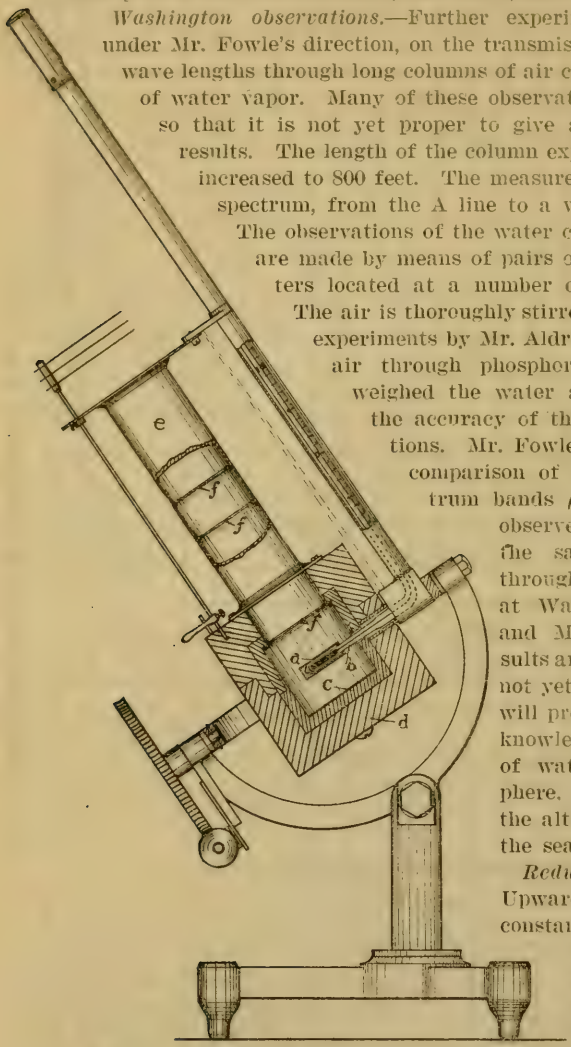

FIG. 3.—Abbot silver disk pyrheliometer.

Reduction of observations.—Upward of 100 days of solar-constant measurements have been made on Mount Wilson on each of the last several years. Each day requires the equivalent of three full days of computation. This work is being done at Washington by Messrs. Fowle and Aldrich and Miss Graves and certain graphical parts of it by minor clerk Segal. The solar-constant reductions are computed as far as the middle of the observing season of 1910.

Pyrheliometry.—Additional comparisons of the Mount Wilson secondary pyrheliometers have been made with primary standard pyrheliometer No. 3. These are not yet all reduced, but such as have been finished confirm the results of the previous fiscal year, so that we may regard the scale of absolute pyrheli-

ometry as now satisfactorily established, and with it the mean value of the solar constant of radiation for the epoch 1905–1910 as fixed at 1.922 calories per square centimeter per minute.

Additional copies of the secondary silver-disk pyrheliometer shown in the accompanying illustration (fig. 3) have been standardized and sent abroad by the Institution as loans or purchases. There have now been sent copies to Russia, Germany, France, Italy, England, Peru, Argentina, and several within the United States, making in all 10 copies now in other hands than ours, besides several now being made to order. The Institution has undertaken the business relating to furnishing these pyrheliometers, which are standardized at the Astrophysical Observatory, to promote exact knowledge of the sun and its possible variability.

SUMMARY.

The year has been distinguished by a successful expedition to Mount Whitney. The results obtained there confirm the view that determinations of the intensity of the solar radiation outside the earth's atmosphere by the spectrobolometric method of high and low sun observation are not dependent on the observer's altitude above sea level, provided the conditions are otherwise good. The Mount Whitney expedition furnished opportunities also for measurements of the brightness of the sky by day and by night, the influence of water vapor on the sun's spectrum, and the distribution of the sun's energy spectrum outside the atmosphere.

Solar-constant observations and closely related researches were continued daily at Mount Wilson until November, 1910, and were taken up again in June, 1911.

Further research tends to confirm the conclusion that the sun's output of radiation varies from day to day in a manner irregular in period and quantity, but roughly running its courses within periods of 5 to 10 days in time and 3 to 10 per cent in amplitude. Assurance seems now complete that this result will be tested in the next fiscal year by long-continued daily observations made simultaneously at two widely separated stations.

Many copies of the silver-disk secondary pyrheliometer have been standardized and sent out to observers in this and foreign countries to promote exactly comparable observations of the sun's radiation.

Measurements of the transparency, for long-wave radiation, of columns of air containing known quantities of water vapor have been continued, and promise highly interesting results.

Respectfully submitted.

C. G. ABBOT, *Director.*

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

Appendix VI.

REPORT ON THE LIBRARY.

Sir: I have the honor to present the following report on the operations of the Library of the Smithsonian Institution for the fiscal year ending June 30, 1911, which was prepared by Mr. Paul Brockett, assistant librarian, who had charge until June 1, 1911.

The following improved methods and consolidation of work have been adopted during the past five years by the Library, in the interest of economy and efficiency:

The catalogue has been modified so as to include the author and donor cards and all previous records, thus making it necessary to consult only one file of cards for any information relating to the contents of the Library. The accession record is typewritten on sheets in accordance with the loose-leaf binding system, thus saving the time of copying titles by hand. The annuals have been transferred from the periodical record to the author catalogue, thus avoiding the making of two entries.

A new system of filing letters in numbered folders, with a card index, has been introduced, making easily accessible the correspondence which, in conjunction with the author and donor catalogue, forms a permanent record of the exchanges for the Smithsonian publications. The old files are gradually being rearranged and incorporated with the new system.

The lending of books in the reference room and periodical reading room has been placed in charge of one person, in connection with other duties.

The titles of purchased books are now entered on cards which are filed alphabetically. These card entries take the place of entries on sheets in book form, with card index.

With a thoroughly modern equipment in the way of furniture and fixtures greater improvements could be made than is possible at present.

Extension of space occupied by library.—Tentative plans have been prepared and submitted for fireproof bookstacks and bookcases for the large hall on the main floor of the Smithsonian Building to contain the libraries of the Government bureaus under the Smithsonian Institution. More definite plans are now in preparation.

International Congress of Archivists and Librarians and the International Congress of Bibliography and Documentation.—The Institution was represented by the assistant librarian, Mr. Paul Brockett, who presented a paper giving the views of the Smithsonian Institution in the matter of international exchange. At the same time he made observations on the methods and arrangement of European libraries. A separate report on this matter has been submitted by him.

ACCESSIONS.

For the Smithsonian deposit, Library of Congress, the accessions recorded numbered 3,136 volumes, 1,277 parts of volumes, 3,137 pamphlets, and 489 charts, making a total of 8,039 publications. The accession numbers run from 500,001 to 504,149.

The parts of serial publications entered on the card catalogue numbered 24,426, and 1,100 slips for completed volumes were made, and 100 cards for new periodicals and annuals.

These publications were forwarded to the Library of Congress immediately upon their receipt and entry. In their transmission 230 boxes were required, containing approximately the equivalent of 9,200 volumes. The actual number of pieces sent, including parts of periodicals, pamphlets, and volumes, was 26,286. This statement does not, however, include about 3,200 parts of serial publications secured in exchange to complete sets and transmitted separately.

Inaugural dissertations and academic publications were received from universities at the following places:

Basel.	Halle-an-der-Saale.	Paris.
Bonn.	Heidelberg.	Prague.
Berlin.	Kiel.	Rostock.
Breslau.	Leipzig.	St. Petersburg.
Cuzco.	Liege.	Tübingen.
Dorpat.	London.	Utrecht.
Freiburg i. B.	Lund.	Würzburg.
Giessen.	Marburg.	Zürich.
Graz.	New Haven.	
Greifswald.	Oviedo.	

Similar publications have been received from the technical high schools at Berlin, Braunschweig, Karlsruhe, and Munich.

The office library received 440 volumes and pamphlets, and 77 parts of volumes and charts, making a total of 517 publications. Thirteen volumes were purchased for the employees' library and one received by donation.

As already mentioned, an author catalogue, combining author and donor entries on cards of standard size was established this year and has taken the place of the previous "donor" record. Catalogue cards made for the author-donor catalogue numbered 3,199. In addition, a new finding list of 320 entries was made for the periodicals in the reading room, making a total of 3,519 cards. The recataloguing of scientific serials and annuals was commenced. The volumes recatalogued numbered 1,008.

The policy of sending foreign public documents presented to the Institution to the Library of Congress without stamping or entering has been continued, and the number of publications given above does not include these, nor does it include other publications for the Library of Congress received through the International Exchange Service.

The work of checking up and completing the Smithsonian deposit sets of publications of scientific societies and learned institutions of the world has been continued, and those of France have received special consideration.

DUPLICATES.

For a number of years about 10,000 duplicate Government documents returned by the Library of Congress, principally relating to statistics, were stored in the south tower of the Smithsonian Building. With the assistance of the International Exchanges during the previous year these publications were arranged and listed and later the larger part was turned over to the New York Public Library to complete its sets. Public documents of the United States were returned to the Superintendent of Documents.

EXCHANGES.

The establishing of new exchanges and the securing of missing parts to complete sets of publications in the Smithsonian Library required the writing of 2,600 letters, resulting in the addition of about 100 periodicals and in the receipt of about 3,200 missing parts.

The mail receipts numbered 32,647 packages, and 3,500 packages were received through the International Exchange Service. The publications contained therein were stamped and distributed for entry from the mail desk.

About 4,453 acknowledgments were made on the regular forms in addition to the letters which were written in acknowledgment of publications received in response to the requests of the Institution for exchange.

New exchanges of the annual reports of the American Historical Association from the allotment agreed upon for that purpose resulted in the acquisition of a number of publications of historical societies throughout the world, which were added to the Smithsonian deposit in the Library of Congress.

READING ROOOM.

The periodical bins in the reading room were rearranged and, as already mentioned, a new finding list was made out on cards which were arranged alphabetically. Publications no longer consulted were transferred to the permanent sets, either in the Smithsonian deposit or in some one of the libraries of the Government branches of the Institution to which they belong. This gives the Institution and its branches a thoroughly useful periodical reading room.

As many of the publications kept in this room are not to be found in other American libraries, they are consulted not only by Washington investigators, but by some from other centers. During the year the scientific staff of the Institution and its branches made use of 131 bound volumes of periodicals, and 2,949 parts of scientific periodicals and popular magazines. In addition, the various bureaus of the Government continue to avail themselves of the opportunity to use these publications, as well as those in the sectional libraries of the branches of the institution, and the library is frequently visited by investigators from all parts of the world.

ART ROOM.

No additions were made to the art objects or engravings in this room during the past year. With the additional space available for the use of the Division of Graphic Arts in the National Museum, it is expected that some of the engravings will be exhibited there.

THE EMPLOYEES' LIBRARY.

The books added to this library by purchase numbered 13, and one publication was presented. By binding, 415 volumes of periodicals were made available for circulation. The total number of books borrowed was 1,876. A number of books selected especially for the purpose were sent to the National Zoological Park, as in previous years.

LIBRARIES OF THE SMITHSONIAN BRANCHES.

United States National Museum.—The congestion in the museum library reported last year has been relieved to a certain extent by the temporary employment of four cataloguers and the assignment of space on two of the

galleries in the old Museum building for sorting and arranging all the duplicate material. The duplicates were arranged, placed on temporary shelving, and roughly catalogued, and the question of disposing of such part of them as are not required in the general library or by the scientific staff will be taken up during the early part of the coming fiscal year.

Many important gifts were received during the year, and the following members of the staff have presented publications: Dr. Theodore N. Gill, Mr. J. H. Riley, Dr. C. W. Richmond, Mr. Robert Ridgway, Dr. W. H. Dall, Dr. Paul Bartsch, Mr. W. H. Holmes, Dr. Walter Hough, Dr. F. H. Knowlton, Mr. J. C. Crawford, and the late Mr. D. W. Coquillett.

The Museum library now contains 40,211 volumes, 66,674 unbound papers, and 110 manuscrips. The accessions during the year consisted of 1,911 books, 4,014 pamphlets, and 202 parts of volumes; 878 books, 1,033 complete volumes of periodicals, and 4,181 pamphlets were catalogued.

Attention has been given to the preparation of volumes for binding, with the result that 809 books were sent to the Government bindery.

The number of books, periodicals, and pamphlets borrowed from the general library amounted to 28,028, among which were 5,582 obtained from the Library of Congress and other libraries, and 4,142 assigned to the sectional libraries of the Museum.

One sectional library has been added to those already established, and the complete list now stands as follows:

Administration	Geology	Paleobotany
Administrative assistant's office	History	Parasites
	Insects	Physical anthropology
Anthropology	Invertebrate paleontology	Prehistoric archeology
Biology	Mammals	Reptiles and batrachians
Birds	Marine invertebrates	Superintendent's office
Botany	Materia medica	Taxidermy
Comparative anatomy	Mesozoic fossils	Technology
Editor's office	Mineralogy	Vertebrate paleontology
Ethnology	Mollusks	
Fishes	Oriental archeology	

The records of the Museum library consist of an authors' catalogue, an accession book, a periodical record on standard cards, and a lending record. This lending record is on cards and includes the books borrowed from the Library of Congress and other libraries for the use of the scientific staff. No changes were made either in the arrangement or in the methods of carrying on this work.

Letters requesting new exchanges and for the purpose of completing the sets already in the Museum library have been given every consideration, and a number of titles have been added in this way.

Owing to the crowded condition of the general library, it has been necessary to use the reading room as a place for receiving and distributing publications for the Museum library. The transfer and arranging of the duplicates on the galleries will relieve this condition to some extent and make it possible for that work to be done elsewhere.

Bureau of American Ethnology.—The report of this library will be made by the ethnologist in charge and incorporated in his general report.

Astrophysical Observatory.—A thorough overhauling of this library and the removal of duplicates and such other material as is not needed was undertaken during the year. As a result, the observatory now has for reference a very efficient working library relating to astrophysics and allied subjects. During

the year 93 volumes and 11 parts of volumes were added, making a total addition of 104 publications.

National Zoological Park.—A small reference library of zoological books is maintained at the park, to which 15 volumes were added during the year.

Summary of accessions.—The following statement summarizes all the accessions during the year, except for the Bureau of American Ethnology, which is separately administered:

Smithsonian deposit in Library of Congress, including parts to complete sets	11,239
Smithsonian office, Astrophysical Observatory, National Zoological Park, and International Exchanges	676
United States National Museum Library	6,127
Total	18,042

Respectfully submitted.

F. W. TRUE,
Assistant Secretary in charge of Library and Exchanges.

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

Appendix VII.

REPORT ON THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

Sir: I have the honor to submit the following report on the operations of the United States Bureau of the International Catalogue of Scientific Literature for the year ending June 30, 1911, together with a report of the proceedings at the Second International Convention of the International Catalogue of Scientific Literature held in London July 12 and 13, 1910, outlining the general condition of the whole enterprise:

The appropriation made by Congress for the maintenance of the bureau during the year was $7,500, an increase of $1,500 over the appropriation for the previous year.

Five persons are regularly employed in the bureau, and the services of temporary clerical assistants occasionally engaged.

In order to properly analyze and classify the many scientific works now being published in the United States it is not only desirable but necessary to obtain the advice and assistance of scientific men who are specialists in the several sciences included in the scope of the catalogue, and the increase of $1,500 in the appropriation for the catalogue this year has made it possible to have some of the more technical papers referred to such specialists.

It is a matter of gratification to report that the utmost interest has been shown by all the scientific men who have been approached for aid, and that for a nominal sum classification citations are prepared and furnished to the bureau, thus rendering it possible for the scientific publications of the United States to be not only indexed in a thorough bibliographical manner, but also, when necessary, classified by specialists. The classification numbers used in the subject-catalogue refer to the subject-contents of the papers cited, and furnish the equivalent of an abstract of each paper indexed.

During the year 26,020 cards were sent from this bureau, as follows:

Literature of—	
1901	3
1902	26
1903	28
1904	218
1905	129
1906	374
1907	423
1908	1,301
1909	8,836
1910	14,682
Total	26,020

Thirty-two regional bureaus are now cooperating in the preparation and publication of the International Catalogue of Scientific Literature. The catalogue consists of 17 annual volumes published by a central bureau in London. The regional bureaus are maintained by the countries they represent, usually

by direct governmental grants; the central bureau is maintained by funds derived from subscriptions to the work. Supreme control of the enterprise is vested in a body known as an international convention which met in London in 1905 and again in July, 1910, thereafter to meet every 10 years. Each country maintaining a regional bureau has the right to send delegates to this convention. The assistant in charge of the regional bureau for the United States was appointed by the Secretary of the Smithsonian Institution to represent the United States at the second international convention. The principal countries of the world sent delegates to the convention as follows: Austria, Belgium, Denmark, France, Germany, Netherlands, India, Italy, Japan, New South Wales, Russia, South Australia, Sweden, the United Kingdom, and the United States.

At the opening meeting held in the rooms of the Royal Society on July 12, 1910, Sir Archibald Geikie, president of the Royal Society, was elected chairman, and Prof. Henry E. Armstrong, F. R. S., vice chairman. The report of the executive committee was then laid before the convention. This report stated that the seven annual issues of the catalogue already published, comprising 117 volumes, had cost the London central bureau to edit, print, and publish, $257,980, for which $246,410 had been received from the subscribers to the catalogue. Each annual issue of 17 volumes had averaged 9,117 pages. From estimates made it appeared that when the first 10 annual issues were published the receipts and expenditures of the central bureau would probably balance, and it was thought that taking into account the extent and difficulty of the enterprise this result would not be unsatisfactory.

While the gross annual income received from subscriptions has exceeded the estimate originally made by an average of over $8,000, the cost of editing and printing has been much greater than was originally estimated. This is due mainly to the fact that the size of each issue of the catalogue has greatly exceeded the original estimate, and also, in a lesser degree, to the fact that an edition of 1,000 copies, instead of 500, was printed. The working capital needed was also larger than originally estimated, it being necessary for the Royal Society to advance to the central bureau $37,500, on which interest is paid.

Although the International Catalogue is understood to be a permanent organization it is one of the duties of each convention to authorize the continuation of the publication for definite periods. The following motion, therefore, was made and it was resolved:

> That in view of the success already achieved by the International Catalogue of Scientific Literature and the great importance of the objects promoted by it, it is imperative to continue the publication of the catalogue at least during the period 1911–1915, and, on recommendation of the international council, during the subsequent five years 1916–1920.

After several motions concerning details of organization, it was unanimously voted "that it is most desirable that a capital fund should be obtained for the catalogue." It is now apparent that a capital fund to be at the disposal of the central bureau has been urgently needed since the beginning of the undertaking. Lacking a capital fund, it has been necessary for the central bureau to borrow money on which interest has to be paid, and on account of lack of funds it has been impossible to carry out several plans looking to the general improvement of the work. Had a capital fund been available in the beginning of the enterprise, it would not have been necessary for the subscription price to be placed at such a high figure. Consequently, a larger edition could have been disposed of and at a lower rate to each subscriber. At the session of the convention on July 13, methods of administration were discussed and the following resolution passed:

That each regional bureau be requested to prepare a list of journals in each science which the catalogue will completely index in the annual issue following the year of publication, and that the central bureau be authorized to publish the lists thus prepared.

The new List of Journals will consist of titles of publications devoted almost exclusively to scientific matters, and these journals will be given precedence in the work of the regional bureaus. though references to scientific papers published in other than regular scientific journals will evehtually find a place in the catalogue. Some such action was necessary on account of the impossibility of dealing promptly with the vast number of semiscientific journals now published throughout the world, and, as promptness of publication is one of the most desirable features in an index-catalogue, it was necessary to find some means whereby an index to the more important papers could be prepared practically as soon as the papers themselves were published.

To render it possible to promptly publish future volumes of the catalogue the following resolution was adopted:

That the resolution of the year 1900 authorizing the central bureau to close these volumes at different stated dates, each volume to correspond to the literature of a period of 12 months, be confirmed.

The effect of this resolution will be that the separate volumes of the catalogue will not necessarily cover the whole calendar year but will cover a period of 12 months. A number of discussions then followed, pertaining to plans for improvements in the organization and general work of the regional bureaus. It was then resolved:

That in view of the resolution adopted unanimously by the representatives of the various countries constituting the convention, desiring the Royal Society to continue its responsibility for the publication of the International Catalogue for a further period, the committee appointed be instructed: (1) To take all possible steps to prevent reduplication by the publication of several annual and similar catalogues and indexes on the same subject, by making arrangements such as those now in force with the Zoological Society of London. (2) To obtain further assistance and cooperation in the preparation of the material of the catalogue from the principal scientific societies and academies and the organizations which collect materials for indexing scientific literature.

The idea now seems to prevail that the organization of the International Catalogue of Scientific Literature will gradually be able to cooperate with the present editors and publishers of the various scientific indexes and yearbooks, so that the annual volumes of the International Catalogue will eventually entirely supersede and take the place of all similar publications. This will not only be of common benefit to the International Catalogue and to the societies and private individuals now doing such work, but will greatly assist scientific investigators and librarians in whose interest the International Catalogue is prepared.

The question of publishing a decennial index was then discussed and it was decided that on account of the great expense necessarily involved the work could not for the present be undertaken. The matter was left for the action of the next international council, which will be held within the next two years.

During the meeting of the convention the foreign delegates were the recipients of numerous and gracious hospitalities from the Royal Society, the Royal Society Club, and individually from the English members of the convention.

Very respectfully, yours,

LEONARD C. GUNNELL,
Assistant in Charge.

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

Appendix VIII.

REPORT ON THE PUBLICATIONS.

Sir: I have the honor to submit the following report on the publications of the Smithsonian Institution and its branches during the fiscal year ending June 30, 1911:

The total number of copies of publications of the Smithsonian Institution and its branches distributed during the year was 197,206. This aggregate included 643 volumes and separates of Smithsonian Contributions to Knowledge, 35,935 of Smithsonian Miscellaneous Collections, 19,622 special publications, including 2,743 volumes on the Harriman Alaska expedition; 518 publications not included in the Smithsonian series; 22,482 annual reports and bulletins of the Bureau of American Ethnology, and 110,000 copies of the various publications of the National Museum.

I. SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE.

The Langley Memoir on Mechanical Flight which was begun by the late Secretary Langley in 1904, and continued by Mr. Charles M. Manly, assistant in charge of experiments, was in type and nearly ready for distribution at the close of the year. This work forms a part of volume 27 of the Contributions to Knowledge.

II. SMITHSONIAN MISCELLANEOUS COLLECTIONS.

In the series of Smithsonian Miscellaneous Collections were published (1) cover and preliminary pages for volume 51; (2) two papers of volume 53, with cover, preliminary pages, and index, completing that volume; (3) thirteen papers of volume 56; (4) four papers of volume 57; (5) and the Smithsonian Physical Tables, by F. E. Fowle, forming part of volume 58.

The issues of the Smithsonian Miscellaneous Collections during the year were as follows:

1928. Smithsonian Miscellaneous Collections. Cover and preliminary pages for volume 54. Octavo. Pages v.

1934. Cambrian Geology and Paleontology. No. 6: Olenellus and other Genera of the Mesonacidæ. By Charles D. Walcott. Published August 12, 1910. Octavo. Pages 231–422 (unpaged index), with Plates 23–44. Volume 53, No. 6.

1939. Cambrian Geology and Paleontology. No. 7: Pre-Cambrian Rocks of the Bow River Valley, Alberta, Canada. By Charles D. Walcott. Published August, 1910. Octavo. Pages 423–431, with Plates 45–47. Volume 53. No. 7.

1940. Cambrian Geology and Paleontology. II. Abrupt Appearance of the Cambrian Fauna on the North American Continent. By Charles D. Walcott. Published August 18, 1910. Octavo. Pages 1–16. Volume 57, No. 1.

1941. Notes on a Horn-feeding Lepidopterous Larva from Africa. By August Busck. Published July, 1910. Octavo. Pages 2, with 2 plates. Volume 56, No. 8.

1942. Description of Seven New Species of East African Mammals. By Edmund Heller. Published July 22, 1910. Octavo. Pages 5, with three plates. Volume 56, No. 9.

1943. Smithsonian Miscellaneous Collections. Cover and preliminary pages for volume 51. Octavo.

1944. Smithsonian Physical Tables. Fifth Revised Edition. By F. E. Fowle, aid, Smithsonian Astrophysical Observatory. Published May 17, 1911. Octavo. Pages xxxiv, 318. Volume 58, No. 1.

1945. New Landshells from the Smithsonian African Expedition. By William Healey Dall. Published July 22, 1910. Octavo. Pages 3. Volume 56, No. 10.

1946. Development of the Digestive Canal of the American Alligator. By Albert M. Reese, Professor of Zoology, West Virginia University. Published October 29, 1910. Octavo. Pages 25, with 15 plates. Volume 56, No. 11.

1947. The Flying Apparatus of the Blow-Fly. By Dr. Wolfgang Ritter. Hodgkins Fund. Published May 11, 1911. Octavo. Pages 76, with 20 plates. Volume 56, No. 12.

1949. Cambrian Geology and Paleontology. By Charles D. Walcott. Cover, preliminary pages, and index for papers 1 to 7. Published June 1, 1911. Octavo. Pages ix, 433–498. Volume 53.

1988. Two New African Ratels. By N. Hollister. Published October 10, 1910. Octavo. Pages 3. Volume 56, No. 13.

2003. Descriptions of Ten New African Birds. By Edgar A. Mearns. Published December 23, 1910. Octavo. Pages 7. Volume 56, No. 14.

2004. New Species of Insectivores from British East Africa, Uganda, and the Sudan. By Edmund Heller. Published December 23, 1910. Octavo. Pages 8, with one plate. Volume 56, No. 15.

2005. Some Results of Recent Anthropological Exploration in Peru. By Aleš Hrdlička. Published April 26, 1911. Octavo. Pages 16, with four plates. Volume 56, No. 16.

2006. New Species of Rodents and Carnivores from Equatorial Africa. Published February 28, 1911. Octavo. Pages 16. Volume 56, No. 17.

2007. Bibliography of the Scientific Writings of R. E. C. Stearns. By Miss Mary R. Stearns. With Biographical Sketch by William H. Dall. Published April 12, 1911. Octavo. Pages 15, with one plate. Volume 56, No. 18.

2008. The Silver Disk Pyrheliometer. By. C. G. Abbot. Published March 31, 1911. Octavo. Pages 10, with one plate. Volume 56, No. 19.

2009. Cambrian Geology and Paleontology. II. No. 2. Middle Cambrian Merostomata. By Charles D. Walcott. Published April 8, 1911. Octavo. Pages 17–40, with six plates. Volume 57, No. 2.

2010. Descriptions of Fifteen New African Birds. By Edgar A. Mearns. Published April 17, 1911. Octavo. Pages 11. Volume 56, No. 20.

2011. Cambrian Geology and Paleontology. II. No. 3: Middle Cambrian Holothurians and Medusæ. By Charles D. Walcott. Published June 13, 1911. Octavo. Pages 41–68, with Plates 8–13. Volume 57, No. 3.

2012. Cambrian Geology and Paleontology. II. No. 4: Cambrian Faunas of China. By Charles D. Walcott. Published June 17, 1911. Octavo. Pages 69–108, with Plates 14–17. Valume 57, No. 4.

The following papers of Smithsonian Miscellaneous Collections were in press at the close of the year:

2014. Cambrian Geology and Paleontology. II. No. 5: Middle Cambrian Annelids. By Charles D. Walcott. Pages 109–144, with Plates 18–23. Volume 57, No. 5.

2015. Description of a New Genus and Species of Hummingbird from Panama. By E. W. Nelson. Volume 56, No. 21.

III. SMITHSONIAN ANNUAL REPORTS.

The annual report for 1909 was published in January, 1911.

1986. Annual Report of the Board of Regents of the Smithsonian Institution, showing Operations, Expenditures, and Conditions of the Institution for the year ending June 30, 1909. Octavo. Pages x, 751, with 73 plates and 4 maps. Containing publications 1915, 1916, and 1950–1985.

Small editions of the following papers, forming the general appendix of the Annual Report of the Board of Regents for 1909, were issued in pamphlet form:

1950. The Future of Mathematics. By Henri Poincaré. Pages 123–140.

1951. What Constitutes Superiority in an Airship. By Paul Renard. Pages 141–156.

1952. Researches in Radiotelegraphy. By J. A. Fleming. Pages 157–183, with two plates.

1953. Recent Progress in Physics. By Sir J. J. Thomson. Pages 185–205.

1954. Production of Low Temperatures, and Refrigeration. By L. Marchis. Pages 207–224.

1955. The Nitrogen Question from the Military Standpoint. By Charles E. Munroe. Pages 225–236.

1956. Simon Newcomb. By Ormond Stone. Pages 237–242, with one plate.

1957. Solar-radiation Researches, by Jules César Janssen. By H. de le Baume Pluvinel. Pages 243–251, with one plate.

1958. The Return of Halley's Comet. By W. W. Campbell. Pages 253–259, with four plates.

1959. The Upper Air. By E. Gold and W. A. Harwood. Pages 261–269.

1960. The Formation, Growth, and Habit of Crystals. By Paul Gaubert. Pages 271–278.

1961. The Distribution of Elements in Igneous Rocks. By Henry S. Washington. Pages 279–304.

1962. The Mechanism of Volcanic Action. By H. J. Jonston-Lavis. Pages 305–315, with 3 plates.

1963. Conservation of Natural Resources. By James Douglas. Pages 317–329.

1964. The Antarctic Land of Victoria. By Maurice Zimmermann. Pages 331–353.

1965. Some Results of the British Antarctic Expedition, 1907–9. By E. H. Shackleton. Pages 355–368, with 6 plates and 3 maps.

1966. The Oceanography of the Sea of Greenland. By D. Damas. Pages 369–383, with 2 plates.

1967. From the Niger, by Lake Chad, to the Nile. By Lieut. Boyd Alexander. Pages 385–400, with 3 plates.

1968. Mesopotamia: Past, Present, and Future. By Sir William Willcocks. Pages 401–416, with 4 plates and 1 map.

1969. Albert Gaudry and the Evolution of the Animal Kingdom. By Ph. Glangeaud. Pages 417–429.

1970. Charles Darwin. By August Weismann. Pages 431–452.

1971. Present Problems in Plant Ecology: Problems of Local Distribution in Arid Regions. By Volney M. Spalding. Pages 453–463.

1972. The Instinct of Self-concealment and the Choice of Colors in the Crustacea. By Romuald Minkiewicz. Pages 465–485.

1973. The Origin and Development of the Parasitical Habits in the Cucalidæ. By C. L. Barrett. Pages 487–492, with 2 plates.

1974. Some Remarks on the Protective Resemblance of South African Birds. By Alwin Haagner. Pages 493–504, with 2 plates.

1975. An inquiry into the History of the Current English Names of North American Land Birds. By Spencer Trotter. Pages 505–519.

1976. Condition of Wild Life in Alaska. By Madison Grant. Pages 521–529, with 1 plate.

1977. Recent Discoveries Bearing on the Antiquity of Man in Europe. By George Grant MacCurdy. Pages 531–583, with 18 plates.

1978. European Population of the United States. By W. Z. Ripley. Pages 585–606.

1979. The Republic of Panama and its People. By Eleanor Yorke Bell. Pages 607–637, with 14 plates.

1980. Ceramic Decoration: Its Evolution and Applications. By Louis Franchet. Pages 639–650.

1981. Some Notes on Roman Architecture. By F. T. Baggallay. Pages 651–667, with 4 plates.

1982. The Relation of Science to Human Life. By Adam Sedgwick. Pages 669–682.

1983. Intellectual Work among the Blind. By Pierre Villey. Pages 683–702.

1984. The Relation of Mosquitoes, Flies, Ticks, Fleas, and other Arthropods to Pathology. By G. Marotel. Pages 703–722.

1985. Natural Resistance to Infectious Disease and its Reinforcement. By Simon Flexner. Pages 723–738.

The report of the executive committee and Proceedings of the Board of Regents of the Institution, as well as the report of the Secretary, for the fiscal year ending June 30, 1910, both forming part of the annual report of the Board of Regents to Congress, were published in pamphlet form in December, 1910, as follows:

2001. Report of the Executive Committee and Proceedings of the Board of Regents for the year ending June 30, 1910. Pages 21, with 1 plate.

2002. Report of the Secretary of the Smithsonian Institution for the year ending June 30, 1910. Pages 89.

The general appendix to the Smithsonian Report for 1910 was in type, but actual presswork could not be completed before the close of the fiscal year. In the general appendix are the following papers:

Melville Weston Fuller, 1833–1910, by Charles D. Walcott.

Ornamentation of Rugs and Carpets, by Alan S. Cole.

Recent Progress in Aviation, by Octave Chanute.

Progress in Reclamation of Arid Lands in the Western United States, by F. H. Newell.

Electric Power from the Mississippi River, by Chester M. Clark.

Safety Provisions in the United States Steel Corporation, by David S. Beyer.

The isolation of an Ion, a Precision Measurement of its Charge, and the Correction of Stokes's Law, by R. A. Millikan.

The Telegraphy of Photographs, Wireless and by Wire, by T. Thorne Baker.

Modern Ideas on the Constitution of Matter, by Jean Becquerel.

Some Modern Developments in Methods of Testing Explosives, by Charles E. Munroe.

Sir William Huggins, by W. W. Campbell.
The Solar Constant of Radiation, by C. G. Abbot.
Astronomical Problems of the Southern Hemisphere, by Heber D. Curtis.
The Progressive Disclosure of the Entire Atmosphere of the Sun, by Dr. H. Deslandres.
Recent Progress in Astrophysics in the United States, by J. Bosler.
The Future Habitability of the Earth, by Thomas Chrowder Chamberlin.
What Is Terra Firma? A review of current research in isostasy, by Bailey Willis.
Transpiration and the Ascent of Sap, by Henry H. Dixon.
The Sacred Ear-Flower of the Aztecs, by William Edwin Safford.
Forest Preservation, by Henry S. Graves.
Alexander Agassiz, 1835–1910, by Alfred Goldsborough Mayer.
Recent Work on the Determination of Sex, by Leonard Doncaster.
The Significance of the Pulse Rate in Vertebrate Animals, by Florence Buchanan.
The Natural History of the Solitary Wasps of the Genus Synagris, by E. Roubaud.
A Contribution to the Ecology of the Adult Hoatzin, by C. William Beebe.
Migration of the Pacific Plover to and from the Hawaiian Islands, by Henry W. Henshaw.
The Plumages of the Ostrich, by Prof. J. E. Duerden.
Manifested Life of Tissues Outside of the Organism, by Alexis Carrel and Montrose T. Burrows.
The Origin of Druidism, by Julius Pokorny.
Geographical and Statistical View of the Contemporary Slav Peoples, by Lubor Niederle.
The Cave Dwellings of the Old and New Worlds, by J. Walter Fewkes.
The Origin of West African Crossbows, by Henry Balfour.
Sanitation on Farms, by Allen W. Freeman.
Epidemiology of Tuberculosis, by Robert Koch.

IV. SPECIAL PUBLICATIONS.

The following special publications were issued during the year:

1871. A Reprint of Smithsonian Mathematical Tables: Hyperbolic Functions. By George F. Becker and C. E. Van Orstrand. Published June, 1911. Octavo. Pages li, 321.

1932. Classified list of Publications available for distribution May, 1910. Octavo. Pages 37. July, 1910.

1938. Opinions Rendered by the International Commission on Zoological Nomenclature. Opinions 1 to 35. Octavo. Pages 62. July, 1910.

1989. Opinions Rendered by the International Commission on Zoological Nomenclature. Opinions 26 to 29. Octavo. Pages 63–68. October, 1910.

The following special publication was in type but had not been issued at the close of the year.

2013. Opinions Rendered by the International Commission on Zoological Nomenclature. Opinions 30–37.

HARRIMAN ALASKA SERIES.

The Institution received from Mrs. Edward H. Harriman several thousand copies of volumes descriptive of the Harriman expedition to Alaska in 1899. Special Smithsonian title pages were added to the volumes before distribution by the Institution. The subjects were as follows:

1990. Volume I: Narrative, Glaciers, Natives. By John Burroughs, John Muir, and George Bird Grinnell. Pages 184, with 60 plates and 4 maps.

1991. Volume II: History, Geography, Resources. By William H. Dall, Charles Keeler, B. E. Fernow, Henry Gannett, William H. Brewer, C. Hart Merriam, George Bird Grinnell, and M. L. Washburn. Pages 200, with 64 plates and 1 map.

1992. Volume III: Glaciers and Glaciation. By Grove Karl Gilbert. Pages 231, with 17 plates and 1 map.

1993. Volume IV: Geology and Paleontology. By B. K. Emerson, Charles Palache, William H. Dall, E. O. Ulrich, and F. H. Knowlton. Pages 173, with 33 plates and 1 map.

1994. Volume V: Cryptogamic Botany. By J. Cardot, Clara E. Cummings, Alexander W. Evans, C. H. Peck, P. A. Saccardo, De Alton Saunders, I. Theriot, and William Trelease. Pages 424, with 44 plates.

1995. Volume VIII[1]: Insects. Part I. By William H. Ashmead, Nathan Banks, A. W. Caudell, O. F. Cook, Rolla P. Currie, Harrian G. Dyar, Justus Watson Folsom, O. Heidemann, Trevor Kincaid, Theo. Pergande, and E. A. Schwarz. Pages 238, with 17 plates.

1996. Volume IX: Insects. Part II. By William H. Ashmead, D. W. Coquillett, Trevor Kincaid, and Theo. Pergande. Pages 284, with 4 plates.

1997. Volume X: Crustaceans. By Mary J. Rathbun, Harriet Richardson, S. J. Holmes, and Leon J. Cole. Pages 337, with 26 plates.

1998. Volume XI: Nemerteans. By Wesley R. Coe. Bryozoans. By Alice Robertson. Pages 251, with 25 plates.

1999. Volume XII: Enchytræids. By Gustav Eisen. Tubicolous Annelids. By Katherine J. Bush. Pages 355, with 44 plates.

2000. Volume XIII: Land and Freshwater Mollusks. By William H. Dall. Hydroids. By C. C. Nutting. Pages 250, with 15 plates.

V. PUBLICATIONS OF THE UNITED STATES NATIONAL MUSEUM.

The publications of the National Museum are: (a) The annual report to Congress; (b) the Proceedings of the United States National Museum; and (c) the Bulletin of the United States National Museum, which includes the Contributions from the United States National Herbarium. The editorship of these publications is in charge of Dr. Marcus Benjamin.

The publications issued during the year comprised the annual report for 1910; papers 1750 to 1771 of volume 38, proceedings; papers 1772 to 1845 of volumes 39 and 40, proceedings; papers 1846, 1847, 1849–1852, 1854, and 1855 of volume 41, proceedings; five bulletins and seven parts of volumes of Contributions from the National Herbarium.

The bulletins were as follows:

No. 71. A Monograph of the Foraminifera of the North Pacific Ocean. Part II, Textulariidæ. By Joseph Augustine Cushman.

No. 73. An account of the Beaked Whales of the Family Ziphiidæ in the Collection of the United States National Museum, with Remarks on some Specimens in other American Museums. By Frederick W. True.

No. 74. One some West Indian Echinoids. By Theodor Mortensen.

No. 75. North Pacific Ophiurans in the Collection of the United States National Museum. By Hubert Lyman Clark.

No. 76. Asteroidea of the North Pacific and Adjacent Waters. By Walter Kendrick Fisher.

In the series of Contributions from the National Herbarium there appeared:

Volume 15. The North American Species of Panicum. By A. S. Hitchcock and Agnes Chase.

[1] Volumes VI and VII have not yet been prepared for publication.

Volume 14, Part 2. History of the Coconut Palm in America. By O. F. Cook.
Volume 13, Part 6. The Type Localities of Plants First Described from New Mexico. A Bibliography of New Mexican Botany. By Paul C. Standley.
Volume 13, Part 7. A Preliminary Treatment of the Genus Castilla. By Henry Pittier.
Volume 13, Part 8. The Genus Talinum in Mexico, by J. N. Rose and Paul C. Standley; and Two new Species of Harperella, by J. N. Rose.
Volume 13, Part 9. Studies of Mexican and Central American Plants. No. 7. By J. N. Rose.
Volume 13, Part 10. Miscellaneous Papers. By Albert W. C. T. Herre, William H. Brown, Joseph H. Painter, Paul C. Standley, Edward S. Steele, and E. A. Goldman.

VI. PUBLICATIONS OF THE BUREAU OF AMERICAN ETHNOLOGY.

The publications of the bureau are discussed in detail in another appendix of the Secretary's report. The editorial work is in charge of Mr. J. G. Gurley.

The following eight bulletins were published by the bureau during the year:

Bulletin 30. Handbook of American Indians North of Mexico. Edited by Frederick Webb Hodge. Part 2. Published 1911. Octavo. Pages iv, 1221, with many figures.
Bulletin 37. Antiquities of Central and Southeastern Missouri. By Gerard Fowke. (Report on explorations made in 1906–1907 under the auspices of the Archæological Institute of America.) Published 1910. Octavo. Pages vii, 116, with 19 plates and 20 figures.
Bulletin 40. Handbook of American Indian Languages. By Franz Boas. Part 1. With illustrative sketches by Roland B. Dixon (Maidu), P. E. Goddard (Athapascan: Hupa), William Jones, revised by Truman Michelson (Algonquian), John R. Swanton (Tlingit, Haida), William Thalbitzer (Eskimo); (Franz Boas: Introduction, Chinook, Kwakiutl, Tsimshian; John R. Swanton and Franz Boas, Siouan). Published 1911. Octavo. Pages vii, 1069.
Bulletin 43. Indian Tribes of the Lower Mississippi Valley and Adjacent Coast of the Gulf of Mexico. By John R. Swanton. Published 1911. Octavo. Pages vii, 387, with 32 plates (including 1 map) and 2 figures.
Bulletin 44. Indian Languages of Mexico and Central America, and their Geographical Distribution. By Cyrus Thomas, assisted by John R. Swanton. Accompanied with a linguistic map. Published 1911. Octavo. Pages vii, 108, and 1 map.
Bulletin 45. Chippewa Music. By Frances Densmore. Published 1910. Octavo. Pages xix, 216, with 12 plates, 8 figures, and many musical pieces.
Bulletin 50. Preliminary Report on a Visit to the Navaho National Monument, Arizona. By Jesse Walter Fewkes. Published 1911. Octavo. Pages vii, 35, with 22 plates and 3 figures.
Bulletin 51. Antiquities of the Mesa Verde National Park: Cliff Palace. By Jesse Walter Fewkes. Published 1911. Octavo. Pages 82, with 35 plates and 4 figures.

VII. PUBLICATIONS OF THE SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

There were no new publications issued by the Astrophysical Observatory during the year.

VIII. AMERICAN HISTORICAL ASSOCIATION.

The annual reports of the American Historical Association are transmitted by the association to the Secretary of the Smithsonian Institution and are

communicated to Congress under the provisions of the act of incorporation of the association.

Volume I of the report for the year 1908, sent to the printer in June, 1909, was published in July, 1910. Its contents were as follows:

Report of the Proceedings of the Twenty-fourth Annual Meeting of the American Historical Association. By Waldo G. Leland, secretary.

Report of the Proceedings of the Fifth Annual Meeting of the Pacific Coast Branch. By Jacob N. Bowman, secretary of the branch.

Report of Conference on Relations of Geography to History. By Erle Sparks.

Proceedings of Conference on History in Secondary Schools. Edited by Andrew C. McLaughlin.

Report of Conference on Research in English History. By Edward P. Cheyney.

Report of Conference on Research in American Colonial and Revolutionary History. By Herbert L. Osgood.

Report of Conference on Research in Southern History. By Lyon G. Tyler.

Report on Fifth Annual Conference on the Problems of State and Local Historical Societies. By St. George L. Sioussat.

The Viceroy of New Spain in the Eighteenth Century. By Don E. Smith.

Notes Supplementary to any Edition of Lewis and Clark. By Frederick J. Teggart.

The Historical Value of the Census Records. By Joseph A. Hill.

The American Newspapers of the Eighteenth Century as Sources of History. By William Nelson.

The Wilderness Campaign:

1. Grant's Conduct of the Wilderness Campaign. By Gen. Edward P. Alexander, Confederate States Army.
2. Lee's Conduct of the Wilderness Campaign. By Col. William R. Livermore, United States Army.
3. The Wilderness Campaign from Our Present Point of View. By Maj. Eben Swift, United States Army.

Ninth Annual Report of the Public Archives Commission. By Herman V. Ames, chairman.

Appendix A. Report on the Archives of the State of Maine. By Allen Johnson.

Appendix B. Report on the Archives of the State of Missouri. By Jonas Viles.

Appendix C. Report on the Archives of the State of Washington. By Jacob N. Bowman.

Appendix D. List of the Journals of the Councils and Assemblies and the Acts of the 13 Original Colonies in America Preserved in the Public Record Office, London. Edited by Charles M. Andrews.

Volume II of the 1908 report, sent to the printer April 26, 1910, had not been entirely completed June 30, 1911. It will be made up, for convenience, in two parts, pages 1–807, 808–1617, containing Parts II and III of Texas Diplomatic Correspondence. Edited by Prof. George P. Garrison.

The manuscript of the 1909 report, to form one volume, was sent to the printer January 10, 1911, and was practically all in type before June 30, 1911.

The manuscript of the 1910 report was sent to the printer June 3, 1911.

IX. SOCIETY OF THE DAUGHTERS OF THE AMERICAN REVOLUTION.

The manuscript of the Thirteenth Annual Report of the National Society of the Daughters of the American Revolution, for the year ending October 11,

1910. was received from the society February 24, 1911, and was communicated to Congress on February 27, in accordance with the act of incorporation of that organization.

X. SMITHSONIAN ADVISORY COMMITTEE ON PRINTING AND PUBLICATION.

The editor has continued to serve as secretary of the Smithsonian advisory committee on printing and publication. To this committee have been referred the manuscripts proposed for publication by the various branches of the Institution as well as those offered for printing in the Smithsonian Miscellaneous Collections. The committee also considered forms of routine blanks and various matters pertaining to printing and publication, including the qualities of paper suitable for text and plates. Twenty-four meetings were held and 115 manuscripts were acted upon.

Respectfully submitted.

A. HOWARD CLARK, *Editor.*

Dr. CHARLES W. WALCOTT,
Secretary of the Smithsonian Institution.

Appendix IX.

REPORT ON CONGRESS OF ARCHIVISTS AND LIBRARIANS, AND CONGRESS OF BIBLIOGRAPHY AND DOCUMENTATION.

Sir: I have the honor to present the following report as the representative of the Smithsonian Institution at the International Congress of Archivists and Librarians and the International Congress of Bibliography and Documentation, held at Brussels, Belgium, in August, 1910.

The Congress of Bibliography and Documentation, the first of the two congresses at Brussels, held its meetings from Thursday, August 25, through Saturday, August 27. On the printed list of members there were enrolled 24 associations, bureaus, and other organizations; 34 individual libraries and other institutions; and 160 persons by name, including duplications on lists. Forty-six countries were scheduled as in relation with the congress or with the Institut International de Bibliographie, under whose auspices this congress was held, and there were actually present representatives from at least 16 countries, including, besides the United States, Great Britain, France, Belgium, the Netherlands, Germany, Austria, Russia, Sweden, Switzerland, Spain, Bulgaria, Denmark, Norway, Monaco, and Turkey, about a hundred persons being actually present at most of the meetings.

This congress was officially opened by M. Paul Otlet, one of the secretaries. He spoke of the work of the Institut International de Bibliographie in collecting catalogue cards for every known scientific publication and their arrangement according to the Dewey decimal classification system; also an author's catalogue arranged alphabetically; a collection of picture postal cards of institutions and public buildings from all parts of the world, as well as of prominent persons, and a collection of photographic negatives covering all subjects, from which prints could be made, for persons pursuing a certain line of study. He explained that by documentation was meant the collection and preserving for reference of a series of newspaper and magazine clippings with their illustrations. He referred to the International Exchange Service and mentioned in glowing terms the work of the Smithsonian Institution in organizing and conducting the service in the United States. The congress then proceeded to consider the following subjects:

I. Documents:
   1. Books, reviews, journals;
   2. Illustrations, foreign photographs;
   3. Archives, ancient and administrative.

II. Works and collections:
   1. Editing;
   2. Library cataloguing.
   3. Collections;
   4. Encyclopedic arrangement.

III. Methods:
   1. Cards;
   2. Rules and classification.

IV. Service, loan copies and exchanges:
1. Partial, general, and special;
2. National;
3. International, special;
4. International, scientific.

The subject of "International Exchanges" was briefly reviewed, and the following resolution was passed:

It is desirable to promote further developments of international exchange service, especially in obtaining frequent dispatch, in increasing the number of countries taking part in the international convention, and in providing for gratuitous transmission of all correspondence relative to request for exchanges, to the receipts for publications and to their return. It is especially desirable to admit free or beneficial associations and institutions to such exchange.

It is desirable that the Smithsonian Institution, the initiator of the service of international exchanges, should itself promote the revision of the international convention of 1885 for the purpose of realizing these improvements.

The congress officially visited the Congo Museum at Tervueren and closed with a banquet on the evening of August 27.

The Congress of Archivists and Librarians, second to assemble, but first in point of numbers and scope, met at Brussels from Sunday, August 28, through Wednesday, August 31, under the auspices of the Association of the Belgian Archivists and Librarians, M. Louis Stainier, administrator-inspector of the Royal Library of Belgium, being the official in charge of the preliminary preparations. The printed list showed 18 countries represented by national commissions (with especial reference to archives), 12 countries represented by official delegates, delegations from 9 Belgian learned societies, 49 libraries and other institutions entered on the registry and 389 individual names, these last, of course, representing the personnel of the representative delegations as well as individual members. These 389 enrolled participants represented 21 different countries, including, besides the United States, England, Canada, Germany, France, Belgium, Holland, Austria, Hungary, Spain, Switzerland, Portugal, Russia, Italy, Brazil, Cuba, Denmark, Sweden Norway, Luxemburg, and Monaco.

This congress was convened on the afternoon of the 28th of August with addresses of welcome, and immediately divided into two sections, the archivists and the librarians, which held separate meetings. My time was largely devoted to the library section, and the discussions relating particularly to library methods included cataloguing, classification, and the placing of books upon the shelves. My paper on the International Exchange Service, having been printed in advance and distributed, was read by title. This paper is as follows:

There is no more important subject to be discussed at the Congrès International des Archivistes et des Bibliothecaires than that of the international exchanges, as the value of that service to libraries can not be overestimated. The time has come when the scientific and learned institutions, the public, the research workers, and the students of literature demand the scientific and literary publications of the world.

Considering the question "Dans quel sens a-t-il lieu de réorganiser et d'étendre le service des échanges internationaux" from an American point of view, it does not appear that reorganization is what is needed, for a system of international exchanges working with the hearty cooperation of all nations has not yet ever been developed on the lines of the existing conventions.

The present international exchange service is operating under two conventions made between certain powers, and the work is based upon them. One of these, signed at Brussels in 1886 and officially proclaimed in 1889, made provision for the exchange of official documents and scientific and literary publications. The other, which was concluded and proclaimed at the same time, provided for the immediate exchange of the official journal, as well as of the parliamentary annals and documents of the contracting parties. The

conventions were broadly worded and allowed for the adherence of other states than those that became signatories at the time. The signers were the plenipotentiaries of the United States of America, Belgium, Brazil, Italy, Portugal and the Algarves, Servia, Spain, and the Swiss Confederation. Later the Argentine Republic, Paraguay, and Uraguay signified their adherence, while Bolivia, Chile, Colombia, Costa Rica, France, Liberia, the Netherlands, New South Wales, Peru, Queensland, and Russia have established international exchange bureaus without, however, giving their formal adherence to the conventions. From this it will be seen that there are eleven states that have adhered to the conventions and an equal number that have established bureaus without adherence, while Great Britain, Germany, and the other countries contribute no funds toward the organization of this movement.

It is therefore obvious that under the existing conditions it is not reorganization but organization that is needed, and this may readily be accomplished under the conventions now in force, as they form a firm foundation for a great international institution. The provisions in these conventions made twenty years ago may need revision in order to conform to recent international advancement, and it is possible that the powers that have already agreed to the conventions and lent their support might be willing to reopen them, provided that the powers that have not come in are willing to join in the organization of an international exchange service.

The international exchanges as now carried on are of two classes—scientific and literary publications and official Government publications. The first named of these is of the utmost importance to the cause of education, both scholastic and technical, which the present service has materially advanced by enabling individuals and institutions of learning to disseminate knowledge without restriction and practically without cost to themselves. The scientific institutions are appreciating more and more the fact that their endowments are entirely inadequate to provide for the many calls made upon them, and if in addition to printing their own publications they should have to purchase those of foreign institutions and pay the cost of transportation it would mean that some part of their work would have to be abandoned. It is therefore to a system of international exchanges that they must look for relief in this matter.

The Government exchanges are necessary in order that Governments may ascertain what is being accomplished along similar lines in other countries, and as such publications are issued at the expense of the Governments they should also be distributed at their expense.

The International Exchange Service of the United States is under the direction of the Smithsonian Institution, and was originally inaugurated for the purpose of transmitting publications presented by institutions and individuals in the United States to correspondents abroad, in exchange for like contributions from such recipients, as one of the most efficient means for the "diffusion of knowledge among men," and the entire expense, including that for the exchange of documents published by the Government from 1850 to 1881, was paid from the private funds of the Institution.

Through the action of Congress, upon recommendation of the Department of State, the Smithsonian Institution is recognized by the United States Government as the American agency for the international exchange of governmental, scientific, and literary publications. By the congressional resolutions passed in 1867 and 1901 a certain number of United States Government publications are set aside for exchange with those of foreign countries, to be sent regularly to designated depositories. In accordance with those resolutions there are now forwarded abroad 55 full sets of United States official publications and 33 partial sets; the official journal of the proceedings of Congress, the Congressional Record, is transmitted by mail daily to each of the Parliaments that is willing to reciprocate.

During the fiscal year ending June 30, 1909, the number of packages forwarded through the international exchanges of the United States amounted to 228,875. These packages were sent direct from this country to the one for which they were intended, and from long experience this has been found to be the quickest and most satisfactory method. During the last year nearly 2,000 boxes were shipped in this way without the loss of a single consignment. Shipments are made regularly at least once a month, should the sending be but one package, and to the larger countries every week.

A card index is kept of all correspondents, and upon these cards are recorded the packages sent and received by each institution and individual.

There are now in the United States 3,900 institutions and 8,000 individuals recorded in this index, while the foreign institutions number 16,500 and individuals 34,232. A list of the foreign societies and institutions is published from time to time under the title of "International exchange list," the latest issue being that of 1904.

The public documents received from abroad in exchange are placed in the Library of Congress. The publications received from the scientific and learned societies and institutions of the world form an important part of the Library of the Smithsonian Institution, and while these remain the property of the Institution they are in great part deposited in the Library of Congress.

The needs of the international exchanges under present conditions may be summarized as follows: The adherence of all the civilized nations of the world to the present conventions. The members of the Congress of Archivists and Librarians can do much to further the movement by lending their efforts to arouse the interest of the scientific and literary institutions and societies and governmental authorities in their respective countries, to the end that official action may be taken. The scientific institutions and societies of each country should examine the workings of the international exchange system and solicit exchange of publications from like societies abroad, using the service as a medium of transmission.

Governments should provide a sufficient number of sets of their official publications for exchange purposes in order that each country may have a full set if desired, and in addition there should be copies of the official journals of the Parliaments, or similar bodies, for the interparliamentary exchanges.

Bureaus already established, as well as those to be established, should be granted an appropriation that will allow the carrying out in full of the stipulations of the conventions. A well-paid and energetic staff with a well-equipped office would insure expeditious work and prompt delivery. The present facilities for rapid transportation would be greatly increased by each international exchange office having the franking privilege, such as is allowed in the United States, and the granting of special concessions by the postal authorities, through the International Postal Union, which could possibly be arranged should every nation become a party to the present conventions.

The international exchanges should be extended to every quarter of the globe, and efforts should be made to bring the powers to realize the necessity of perfecting an institution already established which has for its object the "increase and diffusion of knowledge among men."

I gave a résumé of the contents of the above paper and was asked for some resolution which could be passed by the congress incorporating a suggestion contained in the paper "that the members of the Congress of Archivists and Librarians could do much to further the movement by lending their efforts to arouse the interest of the scientific and literary institutions and societies and governmental authorities in their respective countries, to the end that official action may be taken."

The resolution was presented in English, translated into French, and again translated into English, and appears as follows in the Library Journal:

That the scientific and literary institutions, as well as the governmental authorities of all countries, should unite their efforts to obtain the official provision for international exchanges.—VI. Q. 7. International Exchanges (Paul Brockett, Washington).

Regarding the use of the exchange service by private institutions, M. Langlois, Bibliothécaire-en-chef de l'Institut Catholique, of Paris, having experienced some difficulty in sending packages from France, presented the following resolution:

That the international exchanges should be accorded, liberally and in the interest of all workers, to establishments of private initiative (libraries of free institutions and learned societies), which conform to the general regulations and provide reciprocity.—VII. Q. 7. (M. Langlois, Paris, as amended by M. Grosjean, Bruxelles.)

I had with me a copy of Article VII of the conventions of 1886, in both English and French, which was read:

ART. VII. The bureaus of exchange will serve, in an official capacity, as intermediaries between the learned bodies and literary and scientific societies, etc., of the contracting States for the reception and transmission of their publications.

It remains, however, well understood that, in such case, the duty of the bureaus of exchange will be confined to the free transmission of the works exchanged, and that these bureaus will not in any manner take the initiative to bring about the establishment of such relations.

One more resolution was presented:

That the service of international exchanges should be developed in the most complete manner in the participating countries, and that like organizations should be created in the other States.—VIII. Q. 7. (M. Sury, Bruxelles.)

In connection with attending this congress permission was given me to visit the principal libraries of London, Paris, and Berlin, and observations were made and are contained in a series of notes taken down at the time for reference in the Smithsonian Library. When the libraries were closed, I occupied my time in visiting the museums, taking notes of methods, etc.

Respectfully submitted.

PAUL BROCKETT,
Assistant Librarian.

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

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